MINERALOGICAL ABSTRACTS

(Vol. 3, No. 6, June, 1927.)

New Minerals.

KITTL (E.). *Aramayoita, un nuevo mineral de Bolivia.* Revista Minera de Bolivia, Oruro, 1927, vol. 2, pp. 53–57.

Specimens of this mineral from the Animas mine [Min. Mag., 1926, vol. 21, p. 156] have been examined by W. Medinacelli at the School of Mines of Oruro. The mineral shows the prominent platy cleavage, has sp. gr. 5·4474, and is associated with tetrahedrite, chalcopyrite, pyrite, and stannite. Analysis I by G. Billig, II by R. Herzenberg reduce, after deducting chalcopyrite and pyrite, to the formula $Ag(Sb,Bi,As)S_2$, while II gives $5Ag_2S.4Sb_2S_3.Bi_2S_3$.

	S.	Sb.	Bi.	As.	Ag.	Cu.	Sn.	Fe.	SiO_2.	Total.
I.	22·5	32·0	2·4	0·9	32·25	2·4	—	3·5	3·8	99·75
II.	21·82	30·00	12·70	0·16	31·04	1·18	n.d.	n.d.	n.d.	96·90

L. J. S.

BUTTGENBACH (H.). *Description d'un minéral du Katanga.* Bull. Cl. Sci. Acad. R. Belgique, 1927, for 1926, pp. 905–913, 1 fig.

The name *kipushite* is applied to a phosphate mineral from the Prince Leopold mine at Kipushi, Belgian Congo, which differs from veszelyite in containing no arsenate, but is identical with a mineral described under that name from Broken Hill, Rhodesia [Min. Mag., 1920, vol. 19, p. 69], and perhaps also with arakawaite from Japan [Abstr., vol. 1, p. 250; vol. 2, p. 380]. It is suggested that kipushite and barthite [for which the formula is incorrectly given] respectively represent the phosphate and arsenate ends of the series, while the name veszelyite is reserved for the intermediate members. The Kipushi mineral occurs as dark blue crystals on hemimorphite with aurichalcite. The monoclinic crystals show the forms (111), ($\bar{1}$11), (110), (421), (210); $a:b:c = 1·3308:1:1·0685$, $\beta = 75° 10\frac{1}{2}'$ [another orientation, also different from that previously adopted for veszelyite, is given]. Cleavage ($\bar{1}$11) poor. The optic axial plane is (010) and $Bx_a : c = +96\frac{1}{2}°$, positive, n between 1·63 and 1·74. Sp. gr. > 3·37, H. < 4. Analysis by — Bolsius, CuO 35·99, ZnO 28·94, P_2O_5 19·90, H_2O 14·31, SiO_2 0·65 = 99·79, gives the formula $(Cu,Zn)_3(PO_4)_2.3(Cu,Zn)(OH)_2.3H_2O$. L. J. S.

Buttgenbach (H.). *Notes minéralogiques.* Ann. Soc. Géol. Belgique, 1926, vol. 49, Bull. pp. B 164–B 180, 7 figs.

L'Héterobrochantite, variété d'antlérite (*stelznérite*).—A specimen of unknown locality (perhaps Chile), of which a preliminary description was given by G. Cesàro and H. Buttgenbach in 1896, has the same composition, $CuSO_4.2Cu(OH)_2$, as antlerite. Sp. gr. 3·757, H. $2\frac{1}{2}$; cleavage (010) perfect, (100) distinct; optic axial plane (010), $Bx_a \perp (001)$, positive, α 1·743, γ 1·776. The microscopical crystals, although orthorhombic, have an optical orientation different from that of brochantite and antlerite, and they present a hemimorphic development. Artificial crystals of 'brochantite' prepared by C. Friedel and N. Atanasesco in 1885 were examined and found to differ in optical orientation from brochantite, langite, antlerite, and heterobrochantite.

Formes cristallines de la neptunite.—A crystal of neptunite from Narsarsuk, Greenland, shows the forms $c(001)$, $a(100)$, $m(110)$, $u(\bar{5}12)$, $s(111)$, $v(221)$, $d(\bar{3}01)$, and new $(\bar{1}3.0.1)$ $[a:b:c = 1{\cdot}3164:1:0{\cdot}8076$, $\beta = 64° 22']$.

Moyen pratique de distinguer le sel gemme des sels de potasse.—A cleavage face of halite when scratched with a knife in a direction perpendicular to a cube edge shows a series of minute isosceles triangles along the barbed scratch (G. Cesàro, 1890). This is not shown by sylvine or any of the potash salts.

Constantes optiques de la syngenite.—Discrepancies in the recorded optical constants of syngenite are discussed. The birefringence on (100) was measured as 0·0026, and the angle of emergence of the acute negative bisectrix as 21° in air with the normal to (100). L. J. S.

Buttgenbach (H.). *Minéraux du Katanga.* Ann. Soc. Géol. Belgique, 1926, vol. 50, Bull. B 35–B 40, 3 figs.

Cristaux de connellite-buttgenbachite.—The minute acicular crystals of buttgenbachite from Likasi [Abstr., vol. 3, p. 6] are hexagonal with the connellite forms *a m p* [Dana's letters] and $a:c = 1:1{\cdot}122$, as deduced from measurements made under the microscope. They are optically negative with $\omega > 1{\cdot}74$ and scarcely appreciable birefringence (connellite being positive with $\omega < 1{\cdot}74$ and birefringence 0·003 to 0·024). The optical characters are, however, difficult to determine owing to the depth of colour. There is no pleochroism. It is probable that some crystals represent isomorphous mixtures of connellite $2CuCl_2.CuSO_4.15Cu(OH)_2.4H_2O$ and of buttgenbachite $2CuCl_2.Cu(NO_3)_2.15Cu(OH)_2.4H_2O$.

Iodargyrite du Katanga.—Iodyrite was found between the fibres of radiated malachite. L. J. S.

GRUTTERINK (J. A.). *Truscottiet.* Verh. Geol.-Mijnb. Genootschap Nederland, 1925, Geol. Ser., vol. 8, pp. 197–200.

Truscottite from the Lebong Donok gold mine, Benkoelen (Benkulen), Sumatra, was first described by P. Hövig in 1914 [see Min. Mag., 1925, vol. 20, p. 466]. A new examination of a specimen from this locality gave the following data. The mineral forms white spheroidal aggregates (7 mm. diam.) with fibrous platy structure and pearly lustre on the cleavage. Fibres show weak birefringence with straight extinction and negative elongation; n 1·560, sp. gr. 2·47, H. $3\frac{1}{2}$. Analysis by J. de Veies gave SiO_2 57·83, CaO 26·43, MgO 5·33, FeO 0·08, MnO 0·25, Al_2O_3 0·95, K_2O 0·73, Na_2O 0·78, $H_2O(+120°)$ 4·10, $H_2O(-120°)$ 3·41 = 99·89. Omitting water lost below 120°, this gives the formula $2(Ca,Mg)O.3SiO_2.1{\cdot}3H_2O$ (near reyerite); or if all the water is taken into account the formula is the same as that of gyrolite. The mineral is regarded as a zeolite of the gyrolite group. L. J. S.

ELLSWORTH (H. V.). *Toddite—a new uranium mineral from Sudbury district, Ontario.* Amer. Min., 1926, vol. 11, pp. 332–334.

This occurs as small rounded masses, together with little columbite, in a pegmatite dike in Dill township, Sudbury district. It is pitch-black with brilliant sub-metallic lustre on the sub-conchoidal fracture. It is very brittle; H. $6\frac{1}{2}$, sp. gr. 5·041. The crushed powder is almost opaque, dark brown, and optically isotropic. Analysis gave Nb_2O_5 53·73, Ta_2O_5 8·97, TiO_2 0·85, ZrO_2 0·06, SnO_2 0·53, SiO_2 1·77, UO_2 8·71, UO_3 2·37, ThO_2 0·47, PbO 0·44, $(Ce, La, Di)_2O_3$ 0·76, $(Yt, Er)_2O_3$ 3·42, Al_2O_3 0·04, Fe_2O_3 4·68, FeO 4·38, MnO 2·62, BeO 0·47, CaO 2·02, MgO 0·22, H_2O- 0·35, H_2O+ 3·59, hydrocarbon trace, total 100·45. The mineral may be considered as columbite with some iron and manganese replaced by uranium. The ratio of lead to uranium (+thorium) gives the age of the mineral at 300 million years. L. J. S.

SCHALLER (Waldemar T.). *Kernite, a new sodium borate.* Amer. Min., 1927, vol. 12, pp. 24–25.

GALE (Hoyt S.). *A new borate mineral.* Engin. Mining Journ., New York, 1927, vol. 123, p. 10.

This was found as large crystals and cleavage masses in deep borings in the Kramer district, Kern Co., California. It is colourless and transparent with perfect prismatic cleavages ($mm = 71° 8'$), and much

the appearance of gypsum. The crystals are orthorhombic. Sp. gr. 1·953, H. 3, α 1·454, β 1·472, γ 1·488, 2V about 90°, probably negative. Before the blowpipe it swells up and fuses to a clear glass, and it is slowly soluble in cold water. Analysis, Na_2O 22·63, CaO nil, B_2O_3 50·76, H_2O 26·50 = 99·89, gives the formula $Na_2O.2B_2O_3.4H_2O$, like borax, but with less water of crystallization. Nearly half the water is readily lost at 110°. Analysis of the associated ulexite gave Na_2O 7·09, CaO 14·06, B_2O_3 42·94, H_2O 35·54, insol. 0·10 = 99·73. The second note gives some further details as to the mode of occurrence of the mineral and its commercial prospects. L. J. S.

Ahlfeld (Friedrich). *Zinkteallit und Alaskait aus Bolivien.* Centralblatt Min., Abt. A, 1926, pp. 388–391.

Zinc-teallite has been previously described from the Ichocollo mine, Bolivia, under the name pufahlite [Abstr., vol. 2, p. 520]. It is now described from the mines of Carguaycollo (15 km. east of the railway station Rio Mulato between Oruro and Uyuni), where it occurs with blende, galena, mispickel, and pyrite in the cementation zone of veins in silicified dacites. Analysis by R. Herzenberg gave (after deducting cassiterite 12·23, Sb 1·10 %) Sn 41·09, Pb 32·22, Zn 7·44, Fe 1·49, S 17·76, corresponding with the formula $Pb_3Zn_2Sn_5S_{10}$ or $(Pb,Zn)SnS_2$. Alaskaite was found as a massive steel-grey mineral (H. $3\frac{1}{2}$, D 6·23) associated with chalcopyrite and bismuthinite near Cerro Bonete, prov. Sur-Lipez. Analysis by R. Herzenberg gave Bi 55·21, Pb 14·18, Ag 8·93, Cu 2·64, S 17·45 = 98·45, agreeing closely with that of the original alaskaite from Alaska mine, Colorado. L. J. S.

Jakob (Johann). *Sursassit, ein Mangansilikat aus dem Val d'Err (Graubünden).* Schweiz. Min. Petr. Mitt., 1926, vol. 6, pp. 376–380.

This is the mineral referred to as piedmontite by F. P. Müller [Abstr., vol. 1, p. 389]. It forms copper-red fibrous aggregates in crevices in hornstone. Needles show a good cleavage parallel to their length, and are optically biaxial with straight extinction ('therefore orthorhombic'). Pleochroism strong, β ($\parallel$ fibre) red-brown, α and γ pale yellow, n about 1·75 or 1·76, $\gamma - \alpha$ about 0·009. Sp. gr. 3·252. Analysis, SiO_2 34·91, TiO_2 0·10, Al_2O_3 22·50, FeO 1·36, MnO 28·67, MgO 2·80, CaO 3·17, Na_2O 0·43, K_2O 0·15, $H_2O(>110°)$ 5·79 = 99·88, gives the formula $5MnO.2Al_2O_3.5SiO_2.3H_2O$, with a slight excess of silica. A constitutional formula is written as $[Si(SiO_6)_4]Al_4Mn_5H_6$. L. J. S.

Jakob (Johann). *Die Tinzenit-Varietäten aus dem Val d'Err (Graubünden).* Schweiz. Min. Petr. Mitt., 1926, vol. 6, pp. 200–202.

A reply to criticisms that tinzenite [Abstr., vol. 2, p. 251] is not a distinct mineral species. The mineral ranges in colour from citron-yellow to orange-red. Two new analyses of darker coloured material agree closely with the previous analyses. It is suggested that the darker colour may be due to the presence of traces of MnO with the Mn_2O_3.

L. J. S.

Tilley (C. E.). *An unnamed mineral of the olivine group.* Geol. Mag., 1927, vol. 64, pp. 143–144.

The name *shannonite* is suggested for a calcium orthosilicate described by J. P. [i. e. F. P.] Paul in 1906 as a constituent of eudialyte-nepheline-basalt from Shannon Pier [i. e. Tier], Tasmania [Abstr., vol. 2, p. 77]. It is identical with the β-Ca_2SiO_4 prepared artificially by Day, Shepherd, and Wright in the same year. L. J. S.

Foshag (William F.), Berman (Harry M.), & Gage (Robert B.). *The occurrence and properties of chlorophoenicite, a new arsenate from Franklin, New Jersey.* Proc. United States National Museum, 1927, vol. 70, art. 20, 6 pp., 2 figs.

The preliminary account of chlorophoenicite was published in 1924 [Abstr., vol. 2, p. 337]. Some additional data are now given. Hardness 3–3½; $a:b:c = 2{\cdot}357:1:2{\cdot}153$; forms $c(001)$, $a(100)$, $h(\bar{2}03)$, $p(111)$, also occasionally $s(106)$, $r(102)$, $k(\bar{1}04)$; cleavage (100) good. Optic axial plane (010), 2V 83°, negative. The new mineral differs from chondrarsenite and xantharsenite. L. J. S.

Geijer (Per). *Some mineral associations from the Norberg district.* Sveriges Geol. Undersökning, 1927, Årsbok 20 (for 1926), no. 4 (= Ser. C. Avhandlingar och uppsatser, no. 343), 32 pp., 7 figs.

The iron ores of Norberg in central Sweden consist of granular magnetite in silicate skarn replacing dolomite near a granite contact. In the Östanmossa mine, the skarn contains, besides tremolite, actinolite, diopside, garnet, chondrodite, &c., also cerite, orthite, a variety of orthite called magnesium orthite, the new mineral norbergite $Mg_2SiO_4.Mg(F,OH)_2$ [Abstr., vol. 3, p. 110; anal. III below], and two unidentified minerals 'Östanmossa A' and 'Östanmossa B'. Cerite (previously known only from two mines in the Riddarhyttan district) occurs in some abundance, but usually only as microscopic grains. Orthite (anal. I) forms small tabular crystals with vivid pleochroism—

α pale yellowish-green, β reddish-brown, γ blood-red; $\alpha > 1{\cdot}76$, $\beta > 1{\cdot}78$, sp. gr. 4·00. Magnesium orthite or Mg-orthite (anal. II) forms fine-grained brown aggregates with radial or fibrous felted structure; α 1·715, β 1·718, γ 1·733, positive, sp. gr. 3·90. The presence of various rare-earths was determined by X-ray spectroscopic analysis. The composition of the orthite and Mg-orthite is discussed in detail. An approximation to the epidote ratios is only obtained when MgF_2 is subtracted as a separate molecule. In the Malmkärra mine a similar association of minerals occurs, while in the Tallgruvan mine boron minerals take the place of cerium minerals. In both cases, however, minerals containing the group $Mg(F,OH)_2$ are represented, and these have no doubt been formed by the high-temperature metasomatism of the dolomite brought about by emanations from the granite. At the Tallgruvan mine the boron minerals include abundant ludwigite, the new mineral fluoborite $3MgO.B_2O_3 + 3Mg(F,OH)_2$ [Abstr., vol. 3, p. 110; and anal. IV below], and perhaps szajbelyite. Analyses by A. Bygdén:

	SiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	F.	H_2O.	Total.*
I.	31·85	10·09	5·83	5·34	0·27	7·42	9·57	0·87	1·79	99·84
II.	31·39	8·05	1·12	2·29	0·50	14·15	9·36	3·31	2·02	99·905
III.	28·54	0·09	0·69	0·82	0·18	56·45	1·01	13·70	2·90	99·82
IV.	0·45	0·90	0·81	—	0·05	61·65	—	9·30	10·78	99·28

* Totals less O for F_2. I, also Ce_2O_3 11·66, $(La,Nd,Pr)_2O_3$, &c., 15·50, TiO_2 0·02. II, also Ce_2O_3 12·10, $(La,Nd,Pr)_2O_3$, &c., 17·00, TiO_2 0·005. III, also CO_2, 1·21. IV, also B_2O_3 17·90, CO_2 1·36.

L. J. S.

Steinmetz (H.). *Phosphophyllit und Reddingit von Hagendorf.* Zeits. Krist., 1926, vol. 64, pp. 405–412, 4 figs.

Certain errors are noted in the recent descriptions of new phosphate minerals from the pegmatites at Hagendorf, Bavaria [Abstr., vol. 1, p. 124; vol. 2, p. 417]. A new analysis (I) of phosphophyllite shows this to be mainly a zinc phosphate with the same general formula $R_3(PO_4)_2.4H_2O$ as hopeite. A new crystal form p (125) is noted, and α 1·595, β 1·606, γ 1·617 (Na). A relation is shown between the angles of the monoclinic phosphophyllite and the orthorhombic hopeite. Anal. II proves 'phosphoferrite' to be an iron-rich variety of reddingite, $R_3(PO_4)_2.3H_2O$. The orthorhombic crystals, $a : b : c = 0{\cdot}8629 : 1 : 0{\cdot}9418$, show 19 forms, several of which are new. Cleavage (010), but not perfect. Optic axial plane (010), $Bx_a \perp (001)$, positive; sp. gr. 2·96–3·10. The following corrected formulae are also given: lehnerite, $R_3(PO_4)_2.3H_2O$; baldaufite, $R_5H_2(PO_4)_4.5H_2O$; wenzelite $RHPO_4.2H_2O$.

	P_2O_5.	FeO.	MnO.	CaO.	ZnO.	H_2O.	Total.
I.	32·51	12·24	4·96	—	34·26	16·52	100·49
II.	34·39	37·52	13·63	1·20	—	13·32	100·06

L. J. S.

[Bonshtedt (E. M.), with chemical analyses by K. A. Nenadkevich & I. D. Starynkevich-Borneman], Бонштедт (Э. М.), с аналитическими данными К. А. Ненадкевича и И. Д. Старынкевич-Борнеман. О новых минералах группы мозандрита из Хибинских Тундр.—Bonstedt (E.). *Sur deux nouveaux minéraux du groupe de la mosandrite des Monts Chibines.* Изв. Акад. Наук СССР (Bull. Acad. Sci. URSS), 1926, ser. 6, vol. 20, pp. 1181–1198, 1 fig.

Rinkolite [analysis and data already given in Abstr., vol. 3, p. 236] is widely distributed, being described from nine places, in association with eudialyte, aegirine, nepheline, lamprophyllite, &c. It forms rough crystals elongated along the *c*-axis and flattened on (100), with the forms (100), (410), (520), (210), (320), (110), (120), (010), (341), (341). [No measurements are given.] Cleavage (100) perfect, (010) not quite so good. The variations in the optical data for material from different localities are tabulated. In thin sections the mineral is almost colourless and only feebly pleochroic. *Lovchorrite* [Abstr., vol. 3, p. 236] forms glassy masses cementing the other minerals (nepheline, eudialyte, apatite, albite, aegirine). It is found in abundance, but only in one vein (10–20 cm. wide) in the SE. part of the Lovchorr plateau. Under the microscope it is seen to be in part cryptocrystalline and in part amorphous.

P. N. C.

[Kuznetzov I. G.] Кузнецов (И. Г.). Лопарит, новый редкоземельный минерал Хибинских Тундр.—Kouznetzow (J.). *Sur la loparite, un nouveau minéral à éléments rares.* Изв. Геол. Ком. (Bull. Com. Géol.), 1925, vol. 44, pp. 663–682 (Russ. with French résumé, pp. 680–682), 2 pls., 4 text-figs.

Loparite [Abstr., vol. 2, p. 264; vol. 3, p. 236] was found by the author near the railway station Imandra in the peripheral portion of the Khibinsky massif of nepheline-syenite. It forms small (1–2 mm. rarely 10 mm.) black crystals which are always twinned. These have the appearance of cubes with subordinate octahedral faces and twinned on the fluorite law. Cube faces are, however, replaced by (15 . 0 . 1), (14 . 0 . 1), or (13 . 0 . 1), and other forms sometimes present are (301), (501), (411), and (211). The lustre is semi-metallic and the streak brownish-violet. Sp. gr. 4·73, H. $5\frac{1}{2}$, fracture uneven, no cleavage. In thin sections the mineral is dark brownish-red and shows optical

anomalies like perovskite, sometimes also zonal structure; n about 2·3–2·4. It is infusible before the blowpipe, and insoluble in acids except hydrofluoric. Analysis by Y. N. Knipovich gave TiO_2 50·24, SiO_2 0·47, ZrO_2 0·04, Ce_2O_3 18·99 (or CeO_2 19·91), $(Di, La)_2O_3$ 14·18, Yt_2O_3 1·54, CaO 5·08, Na_2O 8·60, K_2O 0·43, total 99·57 (or 100·49). This gives the titanate formula $11Ce(TiO_3)_2.6(Di, La, Yt)_2(TiO_3)_3.6CaTiO_3.9(Na, K)TiO_3$. Loparite is a member of the perovskite group with knopite between loparite and perovskite. Minerals usually associated with loparite are eudialyte, eucolite, and arfvedsonite.

P. N. C.

Billiet (Valère). *Détermination des indices de réfraction de la becquerélite, de la curite, de la kasolite, de la fourmariérite, de la parsonsite, de la dumontite, et de l'ianthinite.* Bull. Soc. Franç. Min., 1926, vol. 49, pp. 136–139. [See Abstr., vol. 3, p. 233.]

Topographical Mineralogy.

Davison (E. H.). *Handbook of Cornish Geology.* Penzance (Roy. Geol. Soc. Cornwall), 1926, 106 pp., 2 pls., 5 text-figs. Price 5*s*.

This gives a useful outline of the geology of Cornwall with special chapters on the metamorphic rocks of the Lizard, the granites and their contact effects and pneumatolysis, the mineral lodes, &c. A list is given of localities where various geological features are well represented, and a bibliography covers the period 1906–26. L. J. S.

Pelloux (Albert). *The minerals of Vesuvius.* Amer. Min., 1927, vol. 12, pp. 14–21.

More than 150 mineral species have been recorded from Vesuvius. These are listed with brief notes in the following four genetic groups. (1) Minerals in the ejected limestone blocks of Monte Somma. (2) Pneumatolytic minerals in ejected blocks of leucotephrite, sanidinite, &c., and coating the walls and fissures in the lavas. (3) Fumarolic products in (*a*) high-temperature ('dry') fumaroles, (*b*) acid fumaroles, (*c*) sal-ammoniac fumaroles, and (*d*) sulphurous fumaroles. (4) Minerals occurring as constituents of the various rocks (leucotephrites, phonolites, monzonites, &c.). L. J. S.

Krůta (F.). *Záhněda od Dačic.* [Smoky-quartz from Dačice.] Příroda, Brno, 1926, vol. 19, p. 233.

Well-developed crystals of smoky-quartz, orthoclase, albite, tourmaline, and green apatite occur in pegmatite at Dačice in south-west Moravia.

F. S.

Hibsch (J. E.). Erläuterungen zur geologischen Übersichtskarte des Böhmischen Mittelgebirges und der unmittelbar angrenzenden Gebiete zugleich ein allgemein verständlicher geolog. Führer. Tetschen a. d. Elbe (Freier des politischen Bezirkes Tetschen), 1926, xvi + 143 pp. + 15 pp. of tables, 1 geol. map, 14 pls., 6 text-figs.

This booklet has been written to explain the 1:100000 geological map of the Bohemian Mittelgebirge, printed in 1924. It summarizes Professor Hibsch's work in this area extending over forty years and it is written in such a way as to be understood by all with a knowledge of the elements of geology and of the important rock-forming minerals. The account of the Tertiary igneous rocks will be appreciated particularly by petrologists who can refer readily for greater detail to the original publications of which a full list is given. In the tables at the end of the book are collected analyses of 124 rocks and 24 minerals. The committee which has arranged for the publication of this admirable work is to be congratulated, and the brief biography of Professor Hibsch and his portrait which forms the frontispiece will be welcomed by all petrologists who have studied his works. [Min. Abstr., vol. 1, p. 156; vol. 2, p. 117; vol. 3, p. 27.] W. C. S.

Zimányi (Károly). *Kristálytani vizsgálatok Krassó-Szörény vármegye pyritjein.* Math. Természettud. Közlemények, Budapest, 1926, vol. 35, pp. 259–310, 10 pls., 21 text-figs. [See Abstr., vol. 3, p. 50.]

Zimányi (Karl). *Über einige Pyrite aus dem Zips-Gömörer Erzgebirge.* Ber. aus Ungarn, Ung. Akad. Wiss., 1926, vol. 33, pp. 33–54, 9 figs. [See Abstr., vol. 2, p. 177.]

—— *Gediegen Kupfer und kristallisierter Hämatit aus dem Gömörer Komitat.* Ibid., pp. 55–58, 5 figs. [See Abstr., vol. 2, p. 176.]

Koch (Sándor). *Nehány ritkább ásvány újabb előfordulása Magyarországon.* [Translation:] Koch (A.). *Neuerliches Vorkommen einiger seltenerer Mineralien in Ungarn.* Földtani Közlöny, Budapest, 1926, vol. 55 (for 1925), pp. 162–168 (Hung.), pp. 332–339 (Germ.), 3 figs.

The following occurrences are described. (1) Native antimony from Pernek, com. Pozsony.—Very sparingly as small grains with stibnite in gneiss. (2) Apophyllite and chabazite from Sztanizsa, com. Hunyad.—Rose-coloured apophyllite as pyramidal crystals with the forms *p a c*. Chabazite as rhombohedral crystals (to 1 cm.) *r e s*. (3) Pyrrhotine,

chalybite, and mispickel from Kisbánya near Felsőbánya, com. Szatmár.—Tabular crystals (5 mm. thick) of pyrrhotine with sub-parallel grouping form prismatic aggregates with the forms (0001) and (11$\bar{2}$2); on massive pyrrhotine. Chalybite as light or dark brown, stout scalenohedral crystals (2–3 mm.) grown on the pyrrhotine show the forms *c a p φ v y* [Goldschmidt's letters], of which (21$\bar{3}$1) and (32$\bar{5}$1) predominate. Mispickel shows the forms *c m e*. (4) Pyrostilpnite and pyrargyrite from Borpatak, com. Szatmár.—These occur sparingly in cellular quartz; the former (new for this locality) as crystals (1–2 mm.) tabular ‖(010) with the forms *a b d D* [Dana's letters], and the latter as small (1–2 mm.) prismatic crystals (11$\bar{2}$0) (01$\bar{1}$2). (5) Brochantite and libethenite from Vaskő, com. Krassó-Szörény.—Brochantite shows the forms *b h d e x* [Goldschmidt's letters], with *x* predominating; libethenite as short-prismatic crystals (110), (011), (111); both occur on limonite. K. Z.

Katzer (Friedrich) [1861–1925]. *Geologie Bosniens und der Hercegovina.* Sarajevo (Direktion der staatlichen Bergbauunternehmungen), 1924–25, vol. 1 [pts. 1–2], iv + 560, 2 pls., 136 text-figs. Price 150 + 30 Dinar.

The first part, published in 1924, gives an account of the Azoic and Palaeozoic formations as developed in different districts. For each district an account is also given of the igneous rocks, economic minerals, and ore-deposits. The smaller second part (pp. 481–560), issued after the death of the author, completes the description of the Palaeozoic, and that is as far as he had written. A Serbo-Croatian translation of the incompleted work is promised. L. J. S.

Poni (P.) [1841–1925]. *Fapte pentru a servi la descrierea mineralogică a României.* Prelucrată de D. M. Cădere. Acad. Română, Mem. Sec. Şti. 1925, ser. 3, vol. 3, no. 5, 43 pp.

This is a second edition of P. Poni's mineralogy of Rumania published in 1900 [Min. Mag., vol. 13, p. 207] and this first part deals with the elements and lamprites [i.e. sulphides, arsenides, and sulpho-salts]. Under each species are listed the localities at which it has been found, together with some brief notes. Many more localities are now represented, but under disguised names, e.g. the well-known mineral locality Nagyag appears as Secărâmb, and Felsőbánya as Baia-Sprie, unfortunately without any clues to connect the old and the new names. For localities formerly in Hungary and Bukovina much of the information has been copied from V. Zepharovich's mineralogical lexicon for Austria. L. J. S.

HERBORDT (O.). *Ueber nutzbare Lagerstätten in Afghanistan.* Zeits. prakt. Geol., 1925, vol. 33, pp. 193–198, 1 fig. (map). [Cf. Abstr., vol. 3, p. 125.]

—— *Mitteilung über einen alten Bleierzbergbau im Ghorbandtal (Afghanistan).* Ibid., 1926, vol. 34, pp. 156–160, 2 figs.

An outline is given of the geology of the country visited by the author. Minerals that have been worked by primitive methods include alluvial gold, argentiferous lead, copper and iron ores, lapis-lazuli, and ruby. There are also good, though inaccessible, deposits of mica, asbestos, and coal. Ruby has long been known at Susst on the upper Amur in Badakshan, and until recently it was worked by the government at Jagdalak, where it occurs with spinel and mica in a white crystalline limestone. The second note gives an account of a deposit of lead ore in the Ghorband [Gorbend] valley, which has been worked intermittently for the past 200 years. L. J. S.

BROWN (J. Coggin). *A geographical classification of the mineral deposits of Burma.* Rec. Geol. Survey India, 1924, vol. 56, pp. 65–108, 1 pl. (map).

The mineral deposits of Burma are classified into the following more or less well-defined geographical groups:

Group.	Stratified Rocks.	Igneous Rocks.	Chief Minerals.
1. Arakan-Naga.	Metamorphosed sediments, Triassic and Cretaceous.	Peridotites and serpentines.	Chromite, native copper, chalcosine, platinum, osmiridium, gold, chrysotile, steatite, magnesite.
Tawmaw.	—	Serpentine.	Jadeite.
2. Pegu Gulf.	Eocene to Recent.	—	Petroleum, coal, amber.
3. Mogok-Frontier.	Archaean gneises, crystalline limestones.	Granite.	Ruby, sapphire, spinel, graphite.
4. Mingin.	—	Quartz-diorite.	Gold, chalcopyrite, pyrite, galena, franklinite, altaite.
5. Chaung Magyi.	Mica-schists, slates, phyllites, quartzites.	Biotite-granite.	Gold.
6. Shan-Yunnan.	Cambrian? Ordovician to Jurassic.	Rhyolites and tuffs in Ordovician.	Galena, blende, chalcopyrite, pyrite, stibnite.
7. Tenasserim.	Argillites, slates, quartzites (age?).	Granite.	Wolframite, cassiterite, molybdenite, bismuth, bismuthinite, chalcopyrite, mispickel, pyrite, blende, stibnite.

In addition, Plio-pleistocene and recent deposits, scattered throughout the country, include lignite, oil shales, residual iron ores, manganese ores, gem gravels, gold and platinum placers, alluvial cassiterite and wolframite. L. J. S.

Adams (Frank D.) & Graham (R. P. D.). *On some minerals from the ruby mining district of Mogok, Upper Burma.* Trans. Roy. Soc. Canada, 1926, ser. 3, vol. 20, sect. IV, pp. 113–136, 6 figs.

A short sketch of the geology [Abstr., vol. 3, p. 189] is followed by a description of various minerals. *Chrysoberyl*:—An aquamarine-coloured, in part clear, and untwinned crystal ($4 \times 2\frac{1}{2} \times 1$ cm.) shows 45 forms of which 26 are new, also a number of vicinal faces and faces in etch-pits. Another crystal is wine-yellow and clear; this is a portion of a trilling and shows an additional new form. *Fibrolite*:—A clear pleochroic pebble with D 3·266, H. $6\frac{3}{4}$, a 1·6578, β 1·6590, γ 1·6776 (Na.). Cracks (cleavage ?) inclined at 35° to the a-axis suggest a macro-dome and give $a : b : c = 0{\cdot}97 : 1 : 0{\cdot}68$ [cf. Min. Mag., vol. 19, p. 107]. *Nepheline*:—A coarse-grained rock (urtite), closely associated with crystalline limestone at Sinkwa, 13 miles west of Mogok, consists of greenish-yellow nepheline, black aegirine-augite, and primary calcite. *Sodalite*:—A pegmatitic rock found in the Tajonngnadine mine at Mogok consists of pale-greenish nepheline and deep-lilac sodalite. The sodalite has D 2·295–2·30, n 1·479 (Na), and its colour slowly fades on exposure to light. *Forsterite*:—As small colourless grains with graphite, phlogopite, diopside, &c., in crystalline limestone. The obtuse negative bisectrix is normal to the imperfect cleavage (010), $2V_o$ 93° 40′. D 3·22; analysis gave SiO_2 41·72, FeO 1·11, MgO 57·83 = 100·66. The following minerals are from a large pegmatite dike cutting granite at Sakangei, west of Mogok, which has been worked for quartz (rock-crystal), yielding clear crystals up to 4 feet long and 1 foot across. *Lepidolite*:—Deep-lilac cleavage plates of large size are pleochroic (pale-pink to rather deep-lilac) with 2E 60° 54′ (Na), 2V 37° 57′, a 1·535, β 1·558 (Na), Bx_a at $1\frac{1}{2}$° to the normal to the cleavage. *Muscovite*:—Pale green with 2E 74° 0′. *Topaz*:—A large ($6\frac{1}{2} \times 8\frac{1}{2} \times 7\frac{1}{2}$ cm.) colourless crystal terminated at one end by the basal plane which is etched and has the appearance of a natural face rather than a cleavage. This suggestion of hemimorphism is confirmed by the piezo-electric property of the crystal. *Cassiterite*:—In small amount as small prismatic or bipyramidal crystals.

L. J. S.

The geology and mineral resources of the Japanese Empire. Imp. Geol. Survey Japan, Tokyo, 1926, vi + 136 pp.

Geological map of Japanese Empire. Imp. Geol. Survey Japan, Tokyo (Maruzen & Co.), 1926, 2nd edition, 4 sheets, scale 1:2,000,000.

This is the second edition of the 'Outlines of the geology of Japan' published in 1902, and has been edited by the new Director of the Survey, Nobuyasu Kanehara. In addition to chapters on the sedimentary formations, and on volcanoes, hot springs, and earthquakes, there is a chapter on the igneous rocks (by H. Sato). The outline descriptions of the mineral resources are grouped under metallic deposits (by K. Kinoshita), coal and petroleum (by G. Kobayashi), and other non-metallic minerals (by Y. Oinouye). Part II deals with the geology and mineral resources of Korea (by S. Kawasaki). A bibliography (pp. 129–136) is arranged under headings corresponding with the chapters in the book. The areas covered by the different groups are: Palaeozoic 13·39, Mesozoic 10·11, Tertiary 20·27, Quaternary 19·59, older igneous rocks 16·02, younger igneous rocks 17·62%. The important mineral deposits are found almost exclusively in the Tertiary rocks. The accompanying map is clearly printed in colours and gives geological formations and place-names in Japanese and English. L. J. S.

Barthoux (J.). *Description de quelques minéraux marocains.* Bull. Soc. Franç. Min., 1924, vol. 47, pp. 36–45, 2 pls., 8 text-figs. [Cf. Abstr., vol. 2, pp. 26, 276.]

A crystallographic account is given of the following minerals. Wulfenite from Jebel Mahser and from Rehamna; five types, tabular and pyramidal. Cerussite from Jebel Mahser in geodes in galena, sometimes associated with wulfenite. Cassiterite in quartz or granulites from Oulmes. Vanadinite of various colours from Jebel Mahser and from Tittaouine. New crystal-forms are recorded for wulfenite and cerussite. E. D. M.

Kaiser (Erich). *Die Diamantenwüste Südwest-Afrikas.* Berlin (D. Reimer), 1926, 2 vols. x + 321 + vii + 535 pp., 13 maps, 56 pls., 32 stereoscopic views, 158 text-figs. Price 120 Mk.

These two handsome volumes give a detailed account of the geology and physiography of the southern diamond fields in the southern Namib desert, South-West Africa, along a strip of coast from latitude 26° 58′ to 27° 39′ S. They serve as an explanation to the accompanying elaborate geological map (scale 1:25 000) in six sheets prepared by W. Beetz and

E. Kaiser; the text also contains contributions from eight other authors. The basement gneisses with intruded older granites and pegmatite veins yielding various minerals are overlain by dolomites, quartzites, and slates of the Konkip and Nama formations. Into these are intruded an interesting series of alkali-rocks (nepheline-syenite, klinghardtite, &c., with melilite-basalt, &c.) Petrographical descriptions and 48 chemical analyses are given of these rocks. Rock weathering and the extensive silicification of the rocks [Abstr., vol. 2, pp. 232, 532] are discussed in detail. The section (vol. 2, pp. 329–343) dealing with the occurrence and possible origin of diamond in the sand-dunes on the coast is comparatively brief. [A good review of the book has been given by R. Brauns, Centralblatt Min., Abt. A, 1926, pp. 200–205.] L. J. S.

Walker (T. L.) & Parsons (A. L.). *A comparison of the Port Arthur, Cobalt, South Lorrain, and Gowganda silver vein minerals.* Univ. Toronto Studies, Geol. Ser., 1925, no. 20, pp. 59–62.

A list of 97 mineral-species showing their associations in each of these silver-mining districts in Ontario. A. L. P.

Young (G. A.). *Geology and economic minerals of Canada.* Geol. Survey Canada, 1926, no. 2065, Econ. Geol. Ser. no. 1, iii + 187 + 57 pp., 38 pls., 3 maps.

As mentioned in a footnote in the text, this is a second edition of Publication no. 1085 issued in 1909. It shows an increase of 93 pages, and there is a new set of illustrations of scenery. Under each of the main physiographic divisions—Canadian shield, St. Lawrence region, Appalachian and Acadian region, Arctic archipelago and Hudson Bay lowland, Interior plains, and Cordilleran region—a brief sketch of the geology is followed by an account of the occurrences of economic minerals. Two large and excellent maps are enclosed in a folder—a geological map and a mineral map. The appendix of 57 pages gives an annotated list of the 470 deposits marked on the mineral map.

L. J. S.

Fisher (Lloyd W.) & Gedney (Edwin K.). *Notes on the mineral localities of Rhode Island. I. Providence County.* Amer. Min., 1926, vol. 11, pp. 334–340.

At least 60 species have been noted from 45 localities in Rhode Island, U.S.A. The present paper gives lists of minerals with remarks under each locality in Providence Co. L. J. S.

Shannon (Earl V.). *Some minerals from the Kensington mica mine, Montgomery County, Maryland.* Amer. Min., 1926, vol. 11, pp. 35–37.

Minerals collected on the old dumps include microcline-perthite, albite, beryl, spessartine, autunite, and perhaps hatchettolite; also black tourmaline in muscovite-schist, which formed the walls of the pegmatite-vein. The spessartine forms small brownish-red masses; n 1·813; analysis gave SiO_2 35·76, Al_2O_3 20·72, Fe_2O_3 0·76, FeO 6·66, MnO 34·40, CaO 1·22, MgO 0·50 = 100·02, agreeing closely with the garnet formula with manganese as MnO (not as Mn_2O_3). L. J. S.

Johnson (J. Harlan) & Waldschmidt (W. A.). *Famous Colorado mineral localities: Table Mountain and its Zeolites.* Amer. Min., 1925, vol. 10, pp. 118–120.

The zeolites occur in the amygdaloidal upper portion of the lower of two flows of basalt, and many fine specimens have been obtained from quarries. They were described by Cross and Hillebrand in 1882 and 1885. L. J. S.

Stutzer (Otto). *Beiträge zur Geologie und Mineralogie von Kolumbien (Südamerika).*

I. —— *Ein Überblick über Oberflächengestalt, Geologie und Mineralogie Kolumbiens.* Neues Jahrb. Min., Abt. B, 1925, Beilage-Band 52, pp. 162–174, 1 fig.

II. Scheibe (Robert) [1859–1923]. *Das Salzvorkommen von Nemocón* Ibid., 1926, vol. 53, pp. 315–320, 2 maps, 2 pls.

III. —— *Das Smaragdvorkommen von Nemocón.* Ibid., 1926, vol. 53, pp. 321–324.

IV. —— *Die Smaragdlagerstätte von Muzo (Kolumbien) und ihre nähere Umgebung.* Ibid., 1926, vol. 54, pp. 419–447, 1 map, 3 pls., 2 text-figs.

I. A brief sketch of the topography, geology, and economic minerals of Colombia is followed by a detailed bibliography (pp. 169–174). II. A hill of rock-salt at Nemocón near Bogotá consists of a huge column penetrating Cretaceous strata. III. The cover of the rock-salt hill consists of a brecciated black shale with much pyrite and sometimes veined with calcite with which are crystals of dolomite and quartz. In this matrix, which is very similar to that at Muzo, a few small emeralds have occasionally been found. IV. An account of the emerald mine near Muzo, dep. Boyacá, visited by the author in 1914–15, with mention of

some other similar occurrences in the same region. [Cf. Abstr., vol. 1, pp. 130, 334; vol. 3, p. 29.] L. J. S.

McKinstry (H. E.). *The minerals of Casapalca, Peru.* Amer. Min., 1927, vol. 12, pp. 33–36, 1 fig.

The mineral veins cut Tertiary beds of red sandstone and shale and overlying andesitic flows, which have been intruded by stocks and sills of albite-diorite-porphyry. The gangue consists of quartz, calcite, and rhodochrosite, and the metallic minerals are chiefly pyrite, blende, galena, and tetrahedrite. The veins display a zonal arrangement both laterally and vertically, and in many places they contain large crystal-lined vughs. These have yielded fine crystals of bournonite [Abstr., vol. 2, p. 432]. Realgar, stibnite, boulangerite, &c., are also found. In addition to surface oxidation products (limonite, malachite, smithsonite, &c.), descending waters in the mine workings have deposited allophane and sulphates. Some contact metamorphic minerals are also found in the district. L. J. S.

Ahlfeld (Federico). *Los minerales de la región metalífera de la Cordillera del Norte* (*Bolivia*). Revista Minera de Bolivia, Oruro, 1926, vol. 1, pp. 102–112.

Brief notes on the occurrence of 103 mineral species in the Bolivian ore-deposits with mention of localities where found. L. J. S.

Smith (George). *A contribution to the mineralogy of New South Wales.* Min. Res. Geol. Survey N.S.W., 1926, no. 34, 145 pp., 32 pls., 9 text-figs. Price 3*s.* 6*d.*

This consists of notes, arranged under species, dealing mainly with those occurrences that have come under the author's observation while mine manager at Broken Hill and later as Inspector of Mines. It does not profess to be complete and comprehensive, but it forms a useful supplement to A. Liversidge's 'Minerals of New South Wales' (1888). There are separate chapters on the Broken Hill mines and on the occurrences of cassiterite, molybdenite, and wolframite. The plates reproduce photographs of actual specimens, but there is no reference to these in the text and it is not stated to what collection they belong.

L. J. S.

Mawson (Douglas). *Additions to the South Australian mineral record.* Trans. Roy. Soc. South Australia, 1926, vol. 50, pp. 25–30.

Several new records from various localities are briefly described, including: andalusite and chiastolite, columbite (sp. gr. 5·70–6·23, in

pegmatite from Binberrie Hill near Olary), plumose muscovite, idocrase, piedmontite, kyanite, chrysocolla, sphene, albite, biotite, allanite, hyalite, rutile (sagenite), volborthite (earthy yellow coatings from Breaden's Hill copper mine near Mundowdna), aventurine quartz, aragonite, fibrolite, and leucoxene. L. J. S.

Zeolites and Associated Minerals.

Machatschki (Felix). *Ein Harmotomvorkommen in Steiermark.* Centralblatt Min., Abt. A., 1926, pp. 115–119, 2 figs.

Harmotome is added to the list of zeolitic minerals found in cavities in the basalt of Weitendorf, Styria [Abstr., vol. 2, p. 56]. It occurs on 'delessite' as minute tabular, or more rarely columnar, crystals reaching 2 mm. in length. The crystals are frequently covered by a thin crust of calcite, and very rarely associated with natrolite. Sp. gr. 2·350–2·365. F. N. A.

Walker (T. L.) & Parsons (A. L.). *Zeolites and related minerals from Lake Nipigon, Ontario.* Univ. Toronto Studies, Geol. Ser., 1926, no. 22, pp. 15–19.

The widely distributed Keweenawan traps are poor in zeolites, except in the railway cuts near Orient Bay. Two remarkably concordant analyses are given of the fresh olivine-diabase from localities 25 miles apart. The minerals occur as fillings in crevices (never in amygdules), and include pectolite, prehnite, analcime, and sparingly scapolite, with an almost complete absence of the zeolites proper. Pectolite as radiating aggregates of white bladed crystals, D 2·857, α 1·601, β 1·604, γ 1·633, gave analysis I by H. C. Rickaby. Prehnite as cream-yellow radiating globules, D 2·900, α 1·162, β 1·617, γ 1·644, gave II.

	SiO_2.	Al_2O_3.	Fe_2O_3.	MnO.	MgO.	CaO.	Na_2O.	K_2O.	H_2O.	Total.
I.	53·28	0·16	0·48	0·33	0·26	33·41	9·14	0·25	2·70	100·01
II.	42·78	25·37	0·87	—	trace	26·95	0·30	trace	4·18	100·45

A. L. P.

Winchell (A. N.). *Doubtful mineral species as illustrated by "faroelite".* Amer. Min., 1926, vol. 11, pp. 82–89, 1 fig.

It is pointed out that a definite chemical formula cannot be given for members of an isomorphous series. The separation by E. T. Wherry [Abstr., vol. 2, p. 302; vol. 3, p. 14] of faroelite as a species distinct from thomsonite is not accepted. New optical data show a continuous series. X-ray spectra of thomsonite and faroelite are identical, and they show certain resemblances to that of natrolite. L. J. S.

Phillips (Alexander H.). *Thomsonite from Peekskill, New York.* Amer. Min., 1924, vol. 9, pp. 240–241.

Radiating thomsonite from rock crevices gave SiO_2 37·44, Al_2O_3 31·57, Fe_2O_3 0·08, CaO 13·80, Na_2O 3·98, K_2O 0·04, H_2O 13·22 = 100·13, with $Na_2 : Ca = 1 : 4$. The high refr. indices, α 1·527, β 1·531, γ 1·543, correspond with the high content of lime. Sp. gr. 2·386. L. J. S.

Slawson (Chester B.). *The thermo-optical properties of heulandite.* Amer. Min., 1925, vol. 10, pp. 305–331, 6 figs.

With rising temperature the optic axial plane of heulandite rotates about the *b*-axis (which is always the acute positive bisectrix). This rotation is counter-clockwise on the face (010) and clockwise on (0$\bar{1}$0). At the same time the size of the optic axial angle changes, so that at one point the crystals are apparently uniaxial. From 25° to 190° C. the rotation is slow and 2E decreases, while from 190° to 300° the rotation is rapid and 2E increases. The break in the curves at 190° corresponds to the change to the 3-molecule hydrate (metaheulandite). Above this point the Laue X-ray diagrams show a breaking down of the metastable structure, though only after the lapse of some time. L. J. S.

Berman (Harry). *Notes on dachiardite.* Amer. Min., 1925, vol. 10, pp. 421–428, 3 figs.

Dachiardite, or ' zeolite mimetica ' (of G. D'Achiardi, 1906), occurs as small colourless crystals in the granite-pegmatite of San Piero in Campo, Elba. They have the form of eight-sided prisms with a cup-like depression at the end and a central longitudinal channel; and are explained as a cyclic twin of eight monoclinic individuals twinned on *m* (110). Measurements gave $a : b : c = 2·4786 : 1 : 1·3663$, $\beta = 72° 11'$; forms *c* (001), *a* (100), *d* (20$\bar{1}$); cleavages (100) and (001) perfect. Optic axial plane $\perp$ (010), $\gamma : c = 35°$, positive, 2V 65°, α 1·492, β 1·496, γ 1·500. L. J. S.

De-Angelis (Maria). *Alcune nuove osservazioni sulla dachiardite.* Atti (Rend.) R. Accad. Lincei, Roma, Cl. Sci. fis. mat. nat., 1925, ser. 6, vol. 2, pp. 133–135, 1 fig.

The cupped octagonal ring is explained as a cyclic twin on (110) of a monoclinic crystal (perhaps domatic class) with the forms (100), (101), and ($\bar{1}$01). The faces of (100) form the octagonal prism and ($\bar{1}$01) the depressed surface of the cup. Cleavage (100) perfect; $a : b : c = 2·43196 : 1 : 1·35203$, $\beta = 75° 49' 36''$. The optic axial plane is normal to (010), and the acute positive bisectrix nearly normal to ($\bar{1}$01); $2H_a$ 63° (in liquid of n 1·656). L. J. S.

Reichert (Róbert). *Laumontit a nadapi gr. Cziráky-féle bányából.* [Translation:] Reichert (R.). *Laumontit aus dem „Graf Cziráky" Steinbruche von Nadap (Komitat Fejér).* Földtani Közlöny, Budapest, 1925, vol. 54 (for 1924), pp. 77–79 (Hung.), pp. 187–189 (Germ.).

Colourless and white aggregates of laumontite occur with chabazite in hornblende-andesite in a quarry near Nadap in the Velencze Mts., com. Fejér. The delicate and cleavable needles, up to 1·5 cm. long, have no terminal faces; $mm = 93° 13'$. Extinction $a' : c = 58–80°$, $\gamma : c = 10–37°$. The material is somewhat altered, and is very friable. Analysis proves it to be β-laumontite (of A. E. Fersman): SiO_2 52·35, Al_2O_3 22·11, CaO 10·80, Na_2O 0·18, K_2O 0·51, MgO 0·06, H_2O 14·64 = 100·65. K. Z.

Sargent (H. C.). *An analcite-bearing tuff in the Carboniferous Limestone of Derbyshire.* Geol. Mag., 1925, vol. 62, pp. 462–463.

Analcime is recorded as occurring associated with calcite in the vesicles of a tuff from Cressbrook Dale. This appears to be the first definite record of zeolites in the Derbyshire lavas. W. A. R.

Smith (T. Hodge). *Notes on the occurrence of zeolites, Ardglen, New South Wales.* Rec. Austr. Mus., 1924, vol. 14, pp. 213–222, 3 pls., 3 text-figs.

A quarry at Ardglen exposes at least three distinct flows of basalt, together with a volcanic breccia. Descriptions are given of these, and an analysis of the fresh columnar basalt of the upper flow. The zeolites (natrolite, apophyllite, analcime, and rarely chabazite) and calcite show different modes of occurrence in the different flows: some are regarded as having crystallized from magmatic solutions, whilst others are secondary and due to the action of surface waters. In the columnar basalt the selvages of the columns consist of a mixture of calcite, natrolite, and clay. A compact banded material in the breccia is perhaps of the same nature. L. J. S.

Christie (W. A. K.). *Gyrolite and okenite from Bombay.* Rec. Geol. Survey India, 1925, vol. 56, pp. 199–203, 1 pl.

The minerals described are from cavities in the Deccan trap of Bombay Island. Gyrolite from Nowroji Hill forms mamillary aggregates with radial platy structure and perfect basal cleavage. It is optically uniaxial and negative, ω 1·549, ϵ 1·536; sp. gr. 2·388–2·390. Analysis I agrees fairly well with the original formula $2CaO.3SiO_2.3H_2O$, but rather more

closely with F. W. Clarke's (1914) formula $Ca_4(Si_2O_7)_3H_{10}$. Associated minerals were probably deposited in the order—gyrolite, okenite, apophyllite, calcite. Okenite from Golangi Hill forms radiating nodules with the surface covered with furry spicules. The needles have a perfect longitudinal cleavage, straight extinction with positive elongation, and n_1 1·540, n_2 1·542; sp. gr. 2·302. Analysis II agrees only approximately with the formula $CaO.2SiO_2.2H_2O$. Associated minerals are laumontite and apophyllite.

	SiO_2.	Al_2O_3.	Fe_2O_3.	MgO.	CaO.	SrO.	Na_2O.	K_2O.	H_2O.	Total.
I.	52·09	0·49	—	0·29	33·07	0·05	0·51	0·01	13·35*	99·86
II.	53·88	0·08	0·01	—	27·61	0·27	0·12	0·06	18·02†	100·05

* Including H_2O 2·99 % lost below 107° C.
† Including H_2O 6·36 % lost below 106° C.

L. J. S.

Kinoshita (Kameki). *Harmotome from Udo, Shimane prefecture.* Japanese Journ. Geol. Geogr., 1922, vol. 1, Abstracts p. (19) [from Journ. Geol. Soc. Tokyo, 1922, vol. 29, pp. 83–89, Japanese].

Harmotome, in association with calcite, laumontite, and small quantities of pyrite, chalcopyrite, and blende, was found in fissures in green tuffs at Udo. It forms typical interpenetration-twins with the forms *b c m a*. Analysis gave SiO_2 45·7, Al_2O_3 15·7, BaO 18·3, CaO 1·6, K_2O (calc.) 2·9, H_2O 16·3 = 100·0. L. J. S.

Rock-forming Minerals and Petrology.

Scheumann (K. H.). *Ausländische Systematik, Klassifikation und Nomenklatur der Magmengesteine I.* Fortschr. Min. Krist. Petr., 1925, vol. 10, pp. 187–310, 13 figs.

A critical review of modern systems of rock classification and nomenclature confined mainly to publications from the British Empire and the United States. The quantitative clarsification of Cross, Iddings, Pirsson, and Washington, and the quantitative mineralogical classification of Johannsen, are described in detail. The discussions on the bases of classification, the development of 'natural' systems, and nomenclature are full of interest to all engaged in systematic petrography. A list of 360 rock-names with brief descriptions of the meanings which have been attached to them by various authors is ample testimony to the existing confusion. The findings of the Committee on British Petrographic Nomenclature (1920) are here discussed for the first time.

W. C. S.

Hinds (Norman E. A.). *Melilite and nephelite basalt in Hawaii.* Journ. Geol., 1925, vol. 33, pp. 526–539.

Gives a list of previous records of nepheline-basalt and melilite-basalt in the Sandwich Islands, and describes new discoveries of these alkali lavas on Kauai and Niihau. These rocks seem to belong to the main eruptive complex. Their origin is discussed. On the island of Hawaii itself neither nepheline- nor melilite-basalts have yet been found.

W. C. S.

Greig (J. W.). *Immiscibility in silicate melts.* Amer. Journ. Sci., 1927, ser. 5, vol. 13, pp. 1–44, 133–154, 30 text-figs.

In certain systems the melting-point curve for cristobalite has a remarkably blunt form. The exact course of this curve near the melting-point had not been traced on account of its nearness to the fusion-point of platinum, and the present research contains a detailed investigation by the usual method of quenching melts from known temperatures. The furnace is described, and cristobalite is found to melt at 1713° C. $\pm$ 5°, a sufficiently close agreement with the earlier value, 1710°. Part I of the paper deals with the binary systems of SiO_2 with MgO, CaO, SrO, and BaO, and with some ternary systems containing these oxides, alumina, and alkalis. The presence of two liquid phases was observed in the binary systems with MgO, SrO, CaO, but not with BaO. In ternary mixtures of these oxides the region of immiscibility has a similar extent to that found in the binary mixtures, but in systems with lime and alkalis, oxides which give steep melting-point curves for cristobalite, the range of immiscibility quickly narrows, and vanishes as the amount of lime, &c., increases. The behaviour of the immiscible melts is very similar in all systems. With increasing amounts of base, a few degrees below the melting-point of cristobalite a second liquid phase appears and the solid coexists with two solutions, one containing only about 4 % of base, the other with up to 30 %. The melting-point then remains invariable until the amount of base exceeds the higher value, when the richer solution alone is present, and the melting-point of cristobalite again falls steeply in the manner shown in the earlier published diagrams. It is the presence of this horizontal part which gave a blunt appearance to the melting-point curves. Melts quenched from temperatures above the horizontal line are shown to consist of two liquid phases; with rising temperature the two liquids approach one another in composition. Several photomicrographs of these mixtures are given, and they are shown to separate on prolonged heating in a crucible; the silica-rich liquid is

very viscous, and there is wide difference in the speed with which they crystallize.

Part II deals with the system FeO–SiO_2, the melts being prepared mainly in silica vessels in a gas furnace. Here again a break in the cristobalite curve occurs a few degrees below the melting-point, and the richer liquid contains about 40 % FeO. Immiscibility was also recognized with SiO_2 and the oxides ZnO, MnO, CaO, and NiO, and reference is made to the parallel cases of immiscibility in the systems containing B_2O_3 instead of silica (Guertler). The temperature of equilibrium between SiO_2 and two liquids in the system CaO–SiO_2 (1698° C.) is proposed as a calibration point in thermometry and reference is made to the bearing of these results on silica refractories. A diagram of representative rock analyses is given, and the opinion is expressed that the present work does not support the idea that silicate magmas have ever split into immiscible liquids. A. F. H.

Vendl (Miklós). *Telérkőzetek a ditrói nefelin-szienit-masszivumból.* [Summary:] *Ganggesteine aus dem Nephelinsyenitstock von Ditró.* Math. Természettud. Értesitő, Budapest, 1926, vol. 43, pp. 215–242 (Hung.), p. 243 (Germ.), 2 figs.

This paper is supplementary to the previous descriptions of the rocks of Ditró [Abstr., vol. 3, pp. 35–36]. Detailed petrographical descriptions are given of thirteen dike rocks, and chemical analyses are given of nepheline-syenite-aplite from Angipatak and of amphibole-camptonite from Várpatak, these representing new types from the Ditró district. Most of the rocks are camptonites and tinguaites; typical aplites and tinguaites are rare. In chemical composition the tinguaites do not differ essentially from nepheline-syenite. The soda-rocks and the alkali-lime-rocks are the result of differentiation. K. Z.

Vendl (Aladár). *Alkálikőzetek Anina és Stájerlak környékén.* [Summary:] *Alkaligesteine in der Umgebung von Anina und Stájerlak.* Math. Természettud. Értesitő, Budapest, 1926, vol. 43, pp. 244–253 (Hung.), p. 254 (Germ.).

Dark-coloured rocks with porphyritic augite, amphibole, olivine, and plagioclase are described from the neighbourhood of Anina and Stájerlak in com. Krassó-Szörény. The augite shows hour-glass structure and has $c:\gamma$ 46–52°, 2V 50–55°. The olivine often encloses picotite crystals. Two chemical analyses are given of the rocks and the parameters calculated. These rocks were described by E. Hussak in 1881 as 'picrite-porphyry'; they are now named limburgite (from Anina) and basanitic

plagioclase-basalt (from Stájerlak). They are regarded as derived from the same magma which broke through the Cretaceous formations.

K. Z.

Lengyel (Endre). *Petrogenetikai megfigyelések a Pilisszentlászlókörnyéki andeziteken.* [Translation:] Lengyel (E.). *Petrogenetische Beobachtungen an den Andesiten der Umgebung von Pilisszentlászló (Comitat Pest, Ungarn).* Földtani Közlöny, Budapest, 1926, vol. 55 (for 1925), pp. 118–127 (Hung.), pp. 309–319 (Germ.), 1 fig.

Eruptive rocks are of wide distribution in this district and include: biotite-amphibole-andesite, amphibole-andesite, hypersthene-andesite, pyroxene-andesite, and andesite-tuffs. Pyroxene-andesite predominates and biotite-amphibole-andesite is of secondary importance. A detailed description is given of these rocks and of their mineral constituents, chiefly from a petrogenetic standpoint. The more acidic tuffs are the earliest, and afterwards the rocks are successively more basic. K. Z.

Barth (Tom.). *Sagvandite, a magnesite bearing igneous rock.* Norsk Geol. Tidsskrift, 1927, vol. 9 (for 1926), pp. 271–303, 1 pl., 6 text-figs.

The rock sagvandite, named and described by K. Pettersen in 1883, has hitherto been regarded as of sedimentary (metamorphic) origin. It is exposed as two small knobs near lake Sagvand, Balsfjord, Tromsø, Norway, and is now described as a dike. Micrometric analysis gives the composition as bronzite 89·9, magnesite 9·2, talc 0·9 %, with occasional grains of picotite. Assays show the presence of platinum (1·22 gram per metric ton) and nickel. The surrounding mica-schist has been altered to a kind of mica-diorite and in the contact-zone there are pennine-magnesite-, garnet-, and hornblende-scapolite-rocks. It is concluded that sagvandite is an igneous rock and that the magnesite and talc are of primary origin. L. J. S.

Barth (Tom.). *Über kali- und wasserhaltige Skapolithe.* Centralblatt Min., Abt. A, 1927, pp. 82–88, 1 fig.

Mention is made of four scapolites which fall away from the curves of N. Sundius [Abstr., vol. 2, p. 220] when the mean refractive index and the birefringence are plotted against the chemical composition Me–Ma. This is attributed to the presence of potash (K_2O 0·34–4·25 %) rather than to water (hydroxyl). L. J. S.

Schaller (Waldemar T.). *Mineral replacements in pegmatite.* (Presidential address.) Amer. Min., 1927, vol. 12, pp. 59–63. [Cf. Abstr., vol. 3, p. 36.]

Many pegmatites appear to be the result of two processes: the original formation by the cooling of the magma, and the later reaction and more or less complete replacement by hydrothermal agencies. Further, it is possible that the potash-felspar may have originally been a fine-grained aggregate of the high-temperature form orthoclase, which later re-crystallized as microcline with introduction of quartz to give the graphic (or eutectic-like) structure. Some perthites are evidently due to the later replacement of microcline by albite. L. J. S.

Borloz (Arnold). *Contribution à l'etude des plagioclases des roches d'epanchement.* Univ. Genève, Faculté Sci., 1924, Thèse no. 744, 55 pp.

An optical examination of the felspars, by the Fedorov and other methods, in sections of various eruptive rocks led to the following generalizations. The phenocrysts and microlites in any one rock may both vary in composition by 40 % anorthite and roughly correspond in composition to each other: either may therefore be used for rock classification. In the acid rocks the microlites are more basic than the phenocrysts, and the reverse characterizes the basic rocks. No sequence in zoned crystals appears general, though in andesites from Borneo the border is basic and in microgabbros it is acid. Albite-twins are common to phenocrysts and Carlsbad-twins to microlites, while pericline-twins are most prevalent in the acid rocks. Individuals of a twin are of the same composition. E. D. M.

Duparc (L.) & Gysin (M.). *Sur la composition et les propriétés optiques de quelques plagioclases.* Schweiz. Min. Petr. Mitt., 1926, vol. 6, pp. 255–266.

Detailed determinations are given for: I, albite, $Ab_{95}An_2Or_3$, from Inschitobel, Amsteg, Uri, Switzerland; II, oligoclase, $Ab_{75\cdot5}An_{20\cdot9}Or_{3\cdot6}$, from Spruce Pine, North Carolina; III, black labradorite, $Ab_{42\cdot7}An_{54\cdot9}Or_{2\cdot4}$, from prov. Quebec.

	SiO_2.	Al_2O_3.	Fe_2O_3.	CaO.	Na_2O.	K_2O.	ign.	Total.	Sp. gr.
I.	68·41	20·26	—	0·46	11·24	0·50	—	100·87	2·63
II.	63·58	22·92	—	4·05	8·09	0·58	0·20	99·42	2·646
III.	54·28	28·28	0·97	11·27	4·85	0·41	—	100·06	2·686

	α_{Na}	β_{Na}	γ_{Na}	2V.	Extinction on (010).
I.	1·5248	1·5326	1·5393	76°	$+18\frac{1}{2}°$
II.	1·5365	1·5408	1·5456	$83\frac{1}{2}$	$+9\frac{1}{2}$
III.	1·5543	1·5573	1·5621	$75\frac{1}{2}$	−20°

The optical orientation was determined from sections cut perpendicular to Bx_a and Bx_o and parallel to (010). L. J. S.

[Belyankin (D. S.)] Бѣлянкин (Д. С.). О корундовом габброиде из Кыштыма.—Beljankin (D.). *Sur un gabbroïde à corindon de Kyshtym.* Изв. Акад. Наук СССР (Bull. Acad. Sci. URSS), 1926, ser. 6, vol. 20, pp. 601–606, 1 fig.

The rock described is from Lake Sugomak in Kyshtym dacha, Urals. Micrometric measurements gave labradorite 43·4, hornblende 15·1, corundum 33·8, spinel 3·9, magnetite 3·6, apatite 0·2 % by weight. The hornblende is pale green with $c : \gamma$ 19°, α 1·640, γ 1·655. The minerals are grouped concentrically: corundum in the centre, followed by a thin shell of green spinel, then a broad zone of labradorite, and finally hornblende. The gabbroid belongs to the felspar-amphibolite series and is compared with the kyschtymite of J. Morozewicz. P. N. C.

Kinoshita (Kameki). *Preliminary notes on the nepheline basalt and some associated rocks from Truk, Caroline Islands.* Japanese Journ. Geol. Geogr., [1926], vol. 4 (for 1925), Abstracts p. (6) [from Journ. Geol. Soc. Tokyo, 1926, vol. 33, pp. 1–8].

A fine-grained greyish-black nepheline-basalt from Truk is seen in micro-sections to be holocrystalline with abundant olivine, augite, magnetite, and interstitial nepheline grains, together with more or less sanidine, bytownite, analcime, biotite, apatite, &c. Analysis by I. Miyayama gave SiO_2 36·79, TiO_2 4·93, Al_2O_3 13·84, Fe_2O_3 3·37, FeO 10·94, MnO 0·51, MgO 8·79, CaO 12·74, Na_2O 3·93, K_2O 1·29, P_2O_5 1·64, H_2O 1·60, total '103·13' [i.e. 100·37]. Associated rocks are plagioclase-basalt and limburgite. L. J. S.

Double (I. S.). *The petrography of the Triassic rocks of the Vale of Clwyd* [Denbighshire]. Proc. Liverpool Geol. Soc., 1926, vol. 14, pp. 249–262.

Heavy minerals isolated from the friable red sandstones include garnet, magnetite, anatase, rutile, zircon, apatite, tourmaline, barytes, brookite, hypersthene, staurolite, monazite, kyanite, with felspars and micas. These occurrences are compared with those in Triassic rocks in England and Antrim. L. J. S.

Broch (Olaf Anton). *Ein suprakrustaler Gneiskomplex auf der Halbinsel Nesodden bei Oslo.* Norsk Geol. Tidsskrift, 1926, vol. 9, pp. i–v, 81–219, 1 map, 16 pls., 9 text-figs.

A detailed petrographical description, with notes on the minerals, of the super-crustal gneiss-complex of the Nesodden peninsula near Oslo. Twelve chemical analyses are given of light and basic gneiss-granites, leptites, mica-schist, garnet-amphibolites, kyanite-gneiss, staurolite-gneiss, oligoclase-gedrite-gneiss, oligoclase-garnet-cummingtonite-gneiss, and albite-gneiss. L. J. S.

Washington (H. S.), Aurousseau (M.), & Keyes (Mary C.). *The lavas of Etna.* Amer. Journ. Sci., 1926, ser. 5, vol. 12, 371–408, 7 figs.

A brief general account of the volcano is given, together with an interesting series of photographs taken in 1914 by A. L. Day. The pre-Etnean lavas around Aci Castello and the Cyclopean Islands include andesine-andesite and olivine-labradorite-basalt; and the basement ('pedestal' or 'terrace') lavas are mostly andesine-andesite with rarer basalt. Prehistoric lavas of the central cone include andesine-andesite, andesine-basalt-andesite, oligoclase-andesite, and oligoclase-andesine-andesite; and recent lavas are andesine-andesite, andesine-basalt, and in one instance (flow of the year 1329) nepheline-oligoclase-andesite. The average of eighteen new analyses of these lavas is: SiO_2 51·91, TiO_2 1·61, Al_2O_3 18·16, Fe_2O_3 3·09, FeO 5·37, MnO 0·13, MgO 3·90, CaO 8·36, Na_2O 4·85, K_2O 2·00, P_2O_5 0·62. The silica percentage ranges from 46·26 in an andesine-andesite to 58·12 in an oligoclase-andesite. L. J. S.

Graham (W. A. P.). *Notes on hornblende.* Amer. Min., 1926, vol. 11, pp. 118–123, 3 figs.

Averages of published analyses of hornblendes from various group of rocks (acid to basic) are plotted, but they show wide variations in the same rock type. Averages are also given for brown and green hornblendes, and it is pointed out that brown hornblendes (usually occurring in volcanic rocks) contain less water. Green hornblende was heated up to 800° C. out of contact with air, and the optical data plotted against the water percentage. With loss of water the refractive indices and the birefringence increase and the extinction-angle diminishes. L. J. S.

Miscellaneous.

Sueno (Teiroku) & Tsuda (Hideo). *The principal refractive indices of danburite from Yamanoura, Hyûga.* Japanese Journ. Geol. Geogr., [1926], vol. 4 (for 1925), Abstracts p. (1) [from Journ. Geol. Soc. Tokyo, 1925, vol. 32, pp. 404–408. Japanese].

The results, as determined by Tsuboi's dispersion method, are for sodium-light α 1·630, β 1·633, γ 1·636. L. J. S.

Robertson (Iris E.). *Crystal forms of tourmaline, azurite, and linarite.* Trans. Proc. Roy. Soc. South Australia, 1925, vol. 49, pp. 266–269, 5 figs.

Large black crystals of tourmaline in pegmatite from Tourmaline Hill, North Flinders Range, South Australia, show the forms *a m m′ c h l r o e x* [Dana's letters], and gave $a : c = 1 : 0{\cdot}44763$. Chessylite from Broken Hill, New South Wales, as fine large crystals of prismatic habit elongated on the *b*-axis, showed the forms *a c σ φ μ θ η v m s w h δ Q γ p f l k u o λ*, and gave $a : b : c = 0{\cdot}8516 : 1 : 0{\cdot}8837$, $\beta = 87° 35\frac{1}{2}'$. Linarite from Broken Hill, N.S.W., is usually mistaken for chessylite, the crystals being of the same habit, though smaller and of rather a lighter blue. They are usually twinned on *a* and show the forms *a b c m e s u*; $a : b : c = 1{\cdot}7216 : 1 : 0{\cdot}8297$, $\beta = 77° 19'$. L. J. S.

Alderman (A. R.). *The vanadium content of certain titaniferous iron ores of South Australia.* Trans. Proc. Roy. Soc. South Australia, 1925, vol. 49, pp. 88–90, 1 fig.

Partial analyses are given of seven ilmenites from various localities. They show 0·14 to 0·84 % V_2O_5, the amount being roughly proportional to that of TiO_2 (12·22 to 60·76 %), with the ratio $V_3O_5 : TiO_2$ about 1 : 60. L. J. S.

Broughton (A. C.). *Radio-active ilmenite, near Mount Painter, Northern Flinders Range.* Trans. Proc. Roy. Soc. South Australia, 1925, vol. 49, pp. 101–102.

Fragments of ilmenite up to 1 lb. in weight are found weathered from mica-schist near a pegmatite contact. They show secondary greyish leucoxene and canary-yellow carnotite. Partial analysis by W. S. Chapman gave TiO_2 34·1, Fe 17·8, U_3O_8 3·7, V present. L. J. S.

Smith (T. Hodge). *Mineralogical notes no. 2.* Rec. Australian Museum, 1926, vol. 15, pp. 69–78, 5 figs.

On the identity of 'green rhodonite' with manganhedenbergite.—The so-called 'green rhodonite' from Broken Hill, New South Wales,

[Abstr., vol. 3, p. 24] has the cleavages and optical characters of a monoclinic pyroxene, and the analysis originally given agrees closely with that of manganhedenbergite from Dognacska. Albite from Upper Bingara, N.S.W.—Small crystals with the forms *c b f m M z p o* [Dana's letters] and extinction-angle on *b* of $18\frac{1}{2}°$ gave on analysis SiO_2 66·98, Al_2O_3 20·07, CaO 0·80, MgO trace, Na_2O 11·32, K_2O 0·17 = 99·34, corresponding with $Ab_{95\cdot36}An_{3\cdot89}Or_{0\cdot55}$. The alteration of gabbro dikes, intrusive into serpentine, to tremolite-prehnite-albite-rocks or to pyroxene-prehnite-grossular-rocks is discussed [Abstr., vol. 2, p. 357]. Autunite from Mount Painter, South Australia.—Analysis by W. A. Greig gave P_2O_5 14·80, UO_3 58·85, CaO 6·56, MgO 0·26, H_2O 19·60 = 100·07, corresponding with $CaO.2UO_3.P_2O_5.10\frac{1}{2}H_2O$. Sp. gr. 3·198. Molybdenite from Kingsgate, N.S.W.—A tabular crystal gave from pyramid faces to the base the angle 56° 39′, corresponding with *t* (20$\bar{2}$3) (axis *c* = 1·908, of A. P. Brown, 1896). Zircon from Anakie, Queensland.—A crystal of sp. gr. 4·69 shows the forms *a m p x*. Zircon from Rocky river, Uralla, N.S.W.—This is abundant in auriferous drift with ilmenite, topaz, and sapphire; forms *a m p*. Diamond from Copetown, N.S.W.—A small octahedron twinned on the spinel-law. Anglesite from Northern Territory.—A specimen from Eveleen mine, 130 miles from Port Darwin, shows larger stout crystals and slender prisms elongated along the *c*-axis; forms *c m o d z* [Dana's letters]. L. J. S.

Guimarães (Djalma). *Nota sobre um mineral radio-activo da fazenda Santa Clara, municipio de Pomba, estado de Minas Geraes.* Bol. Inst. Brasileiro Sci., 1926, vol. 2, pp. 114–123, 5 figs.

The mineral described occurs with xenotime in pegmatite on the Santa Clara estate near Pomba, and has been referred to euxenite by A. Betim Paes Leme (1915; Abstr., vol. 1, p. 24; vol. 2, p. 484). The rough crystals show the orthorhombic forms (010), (110), (111), (201), and from approximate measurements with the contact-goniometer the axial ratios are deduced as $a : b : c = 0{\cdot}404 : 1 : 0{\cdot}3849$. The crystals are optically positive with $Bx_a \perp (010)$, α 2·15, $\gamma - \alpha$ 0·112, $\gamma - \beta$ 0·0076, 2V 69° (calc.). Analyses I (also PbO 1·10, SnO_2, MgO, CaO traces) and II (also PbO not det., SnO_2 trace, MgO 1·68, CaO 0·22) of unaltered red material with brilliant resinous lustre; III (also MgO 0·89, CaO 0·34) and IV (also MgO 0·37, CaO 0·49) of hydrated cream-coloured material V (also ZrO_2 1·20, UO 1·20, MgO 0·90, CaO trace) of black material with red reflections. VI (also ZrO_2 2·29, MgO trace, CaO 0·31) of dark red material. These analyses show more TiO_2 than that given by the

ratio $Nb_2O_5 : TiO_2 = 1 : 4$, and following W. C. Brögger (1906) the material is therefore referred to polycrase rather than to euxenite.

	Ta_2O_5.	Nb_2O_5.	TiO_2.	$(Y,Er)_2O_3$.	Ce_2O_3, &c.	ThO_2.	UO_3.	Fe_2O_3.	H_2O.	Total.
I.	—	27·09	35·12	18·46	0·88	6·41	4·32	0·84	5·87	100·09
II.	—	27·31	35·10	21·33	—	3·16	4·97	0·32	5·62	99·61
III.	—	34·84	38·83	11·02	—	0·44	5·14*	0·79	7·91	100·20
IV.	—	29·07	49·50		7·42		4·46*	—	9·20	100·51
V.	1·41	27·70	27·00	25·39	0·36	3·80	3·38	3·53†	3·66	99·53
VI.	0·70	17·10	39·00	27·68	trace	1·21	5·06	3·88†	2·62	99·85

* U_3O_8. † FeO.

L. J. S.

Candel Vila (Rafael). *Estudio cristalográfico de algunos minerales de la Península Ibérica.* Bol. R. Soc. Española Hist. Nat., 1926, vol. 26, pp. 369–385, 20 figs.

An arrow-head twin (on (130)) of cerussite from the Ramo di Flores mine, Sierra Almagrera, shows 17 crystal-forms. Calcite crystals are described from five Spanish localities. Cassiterite from the Panasqueira mine, Castello Branco, Portugal, showed the forms c a m λ k r h e y δ s z [Goldschmidt's letters], and new ñ (530) and f (547); complex twin intergrowths of several crystals are figured and described. L. J. S.

Quercigh (Emanuele). *Sul solfoselenio di Vulcano (Isole Eolie).* Rend. Accad. Sci. Fis. Mat. (Classe Soc. R. Napoli), Napoli, 1925, ser. 3, vol. 31 (year 64), pp. 65–69.

Old specimens from the fumaroles of Vulcano, Lipari Islands, show reddish-brown glassy sulphoselenium [= selensulphur]. The material is optically isotropic, and the density (less than 4) and refractive index (n_D •2·544–2·675) vary in different fragments. These values of the refractive index correspond with 83–90·5 % Se on the curve of H. E. Merwin and E. S. Larsen (1912). This material differs from that of F. Stromeyer (1824), and is free from ammonium chloride. Other specimens from Vulcano show a crystalline and birefringent sulphoselenium. This is yellow with a slight shade of orange. The portion soluble in carbon disulphide (leaving a residue of arsenic sulphide) gave S 98·71, Se 1.03, Te 0·18 = 99·92, and S 99·06, Se 0·83 Te nil = 99·89.

L. J. S.

Orcel (J.). *Sur la chlorite des marundites du Transvaal.* Compt. Rend. Acad. Sci. Paris, 1925, vol. 181, pp. 795–797.

Lamellar greyish-green chlorite forms a thick band at the side of a marundite vein from near May's Kraal, Leydsdorp, eastern Transvaal

[Abstr., vol. 2, p. 80]. It is optically positive with small axial angle. Analysis gave SiO_2 27·48, TiO_2 0·12, Al_2O_3 24·00, Fe_2O_3 0·57, FeO 9·42, MnO 0·12, MgO 26·57, CaO 0·15, H_2O (at 110°) 0·12, H_2O (over 110°) 12·04, total 100·57, corresponding with $4SiO_2.2Al_2O_3.7MgO.6H_2O$. This is compared with chlorites from the corundum deposits of North Carolina and it is placed in the grochauite group [Abstr., vol. 2, p. 120].

L. J. S.

Bernauer (F.). *Die sog. Smaragddrillinge von Muzo und ihre optischen Anomalien.* Neues Jahrb. Min., Abt. A., 1926, Beilage-Band 54, pp. 205–242, 1 pl., 12 text-figs.

A detailed account is given of certain crystals of emerald from Muzo, Colombia, which show a hexagonal core surrounded by six sectors with fibrous structure, and are known as 'gemelos' (i. e. twins) [Abstr., vol. 1, p. 334]. The sectors are sometimes separated by inclusions of carbonaceous matter, as in chiastolite, and they represent pyramids of growth. Approximate analyses show 8·7 and 9·7 % BeO, with a corresponding excess of Al_2O_3 (probably due to imperfect separation). Sp. gr. 2·648–2·709 (for emerald of the ordinary type 2.694); hardness slightly greater than that of topaz; ω 1·5679–1·5683, ϵ 1·5622–1·5640, $\omega - \epsilon$ 0·0056–0·0065; 2E 0°–8° (rarely 15°). Small (1·2 × 0·8 mm.) prismatic crystals of artificial emerald coloured by vanadium show a similar structure.

L. J. S.

Köhler (Alexander). *Brushit aus Niederösterreich.* Tschermaks Min. Petr. Mitt., 1926, vol. 37, pp. 93–94, 1 fig.

Colourless lath-shaped crystals (1–3 mm.) of brushite encrust a fragment of bone from the Alfred-Salcher mine, near Türnitz in Lower Austria. The positive bisectrix γ (probably Bx_o) is perpendicular to the plates (010), $\beta : c = +18\frac{1}{2}°$, α 1·5373, β 1·5417. L. J. S.

Storz (Max). *Über Infektionserscheinungen durch Arbeiten mit Lembergscher Lösung.* Centrallblatt Min., Abt. A, 1926, pp. 168–169.

A warning to those using Lemberg's solution. The author reports cases of 'poisoning'. These are traced to the formation of colonies of bacteria in the solution when it is kept in closed vessels. F. N. A.

Jung (H.). *Einiges über Tachyhydrit.* Centralblatt Min., Abt. A, 1926, pp. 273–275.

Fresh pale-yellowish tachyhydrite from the Krügershall potash-works in Teutschenthal near Halle has D 1·669, H. near 2, ω 1·520, ϵ 1·512 (Na),

and cleaves into large rhombohedra with $rr = 78°$ ($a : c = 1 : 1{\cdot}761$). Analysis gave Ca 7·72, Mg 9·71, Cl 40·89, H_2O 42·20, corresponding with the usual formula $CaCl_2.2MgCl_2.12H_2O$. Water is lost at a low temperature with decomposition of the mineral; at 105° C. the loss is 17·25 % and the material then has an alkaline reaction; at 18)° 47·90 %, and at 400° 63·7 %, the material then consisting of $CaMg_2Cl_2O_2$ or $CaCl_2 + 2MgO$. L. J. S.

Parker (Robert L.). *Studien am Apatit vom St. Gotthard.* Zeits. Krist., 1926, vol. 64, pp. 224–259, 21 figs.

An account is given of the paragenesis of apatite with quartz, adularia, haematite, &c., in the crevices in gneiss and granite at Fibbia, Lucendro, Seila, and the St. Gotthard Hospice. Detailed descriptions are given of the crystals with special reference to zones and combinations of forms. L. J. S.

Ulrich (Fr.). *Notiz über die optischen Verhältnisse der Vivianitgruppe.* Zeits. Krist., 1926, vol. 64, pp. 143–149, 2 figs.

Discrepancies in the statement of the optical orientation of vivianite [Abstr., vol. 2, p. 141; vol. 3, p. 49] and of other minerals of the group $R''_3[(P,As)_2O_8].8H_2O$, are pointed out, and the reliable data are tabulated. In all cases the optic axial plane is $\perp$(010) with γ in the obtuse axial angle β. L. J. S.

Rinne (Friedrich). *Bemerkungen über optische Anomalien, insbesondere des brasilianer Topas.* Zeits. Krist., 1926, vol. 63, pp. 236–246, 15 figs.

A discussion of the relation between optical anomalies and leptonic structure. Primary and secondary strains in crystals are distinguished. A crystal of topaz from Brazil with uneven pyramid faces showed in (001) and (010) sections a division into sectors with extinction directions 0–20° from the normal position (suggesting triclinic symmetry) and 2E 76½° and 91° in different portions. After heating for 3–5 hours at 950° C. these sections showed optical characters proper to the orthorhombic system. X-ray Laue diagrams taken before and after the heating showed no noticeable difference. The strain causing the optical anomalies is attributed to a distortion of the lattice structure and of the atoms due to isomorphous replacement: this being adjusted by heating to a temperature presumably higher than that at which the crystal was formed. L. J. S.

Parsons (A. L.). *The preservation of mineral specimens.* Amer. Min., 1922, vol. 7, pp. 59–63.

—— *Additional data concerning the preservation of minerals.* Ibid., 1926, vol. 11, pp. 79–82.

Notes on the preservation of minerals in museum collections. Lists are given of minerals that are altered by loss of water; absorption of water; exposure to light; exposure to radioactivity; oxidation (producing tarnish); change of temperature (with volatilization or melting).

L. J. S.

Tokody (László). *Cölestin Stájerlakról.* [Translation:] Tokody (L.) *Cölestin von Stájerlak.* Ann. Hist.-Nat. Musei Nationalis Hungarici, 1926, vol. 24, pp. 211–213 (Hung.), pp. 214–215 (Germ.), 1 fig.

Two generations of celestine crystals from Stájerlak (com. Krassó-Szörény), grown on greyish-black limestone, are identical with respect to their forms and habit. The smaller (1–1·5 mm.) crystals are colourless, and the larger (3–4 mm.) pale-blue and transparent. The forms are *a c o d m z f* [Dana's letters], with *o* predominating and large *a*. K. Z.

Koch (Sándor). *Az ó-radnai vivianit kristályai.* [Translation:] *Vivianitkristalle von Óradna.* Ann. Hist.-Nat. Musei Nationalis Hungarici, 1926, vol. 24, pp. 93–96 (Hung.), pp. 96–98 (Germ.), 3 figs.

Vivianite was found during the years 1892–8 in the 'Amalia' block of the 'Zappeter' level at Óradna, com. Besztercze-Naszód. The crystals occur in cavities in massive pyrite, and are associated with crystals of pyrite, blende, galena, and quartz, these being often coated with a crust of minute chalybite crystals with curved faces. Measurements of ten crystals showed the forms a b m y n w o x z v r [Goldschmidt's letters], of which b m v a are the commonest. K. Z.

Vendl (Mária). *A vaskői aragonit kristályalakja.* [Translation:] Vendl (Marie). *Über den Aragonit von Vaskő.* Ann. Hist.-Nat. Musei Nationalis Hungarici, 1926, vol. 24, pp. 216–223 (Hung.), pp. 223–227 (Germ.), 6 figs.

Transparent, acicular or chisel-shaped crystals of aragonite, 2–12 mm. long and $\frac{1}{2}$–6 mm. thick, from the Theresia mine at Vaskő, com. Krassó-Szörény, occur on white crystalline limestone or on brownish calcite with magnetite, haematite, galena, garnet, dolomite, and quartz. On the acicular crystals bipyramids predominate, and on the chisel-shaped

crystals brachy-domes. Twins on *m* (110) are very common, often repeated and producing fine striae. Forms identified on eleven measured crystals are b Y W U T η Q ρ P O K μ θ ϵ j F I λ β q e h v Ω Ξ i k x m r δ σ ψ ω ι p s [Goldschmidt's letters]. Combinations of forms and measurements are tabulated. K. Z.

Strobentz (Ilona). *Magyarországi dolomitkristályok újabb elemzései.* [Summary:] Strobentz (Helene). *Analysen von ungarischen Dolomitkrystallen.* Földtani Közlöny, Budapest, 1926, vol. 55 (for 1925), pp. 49–57 (Hung.), p. 275 (Germ.).

The following fifteen analyses were made on carefully selected crystallized material from eleven Hungarian localities.

	CaO.	MgO.	FeO.	Fe_2O_3.	Al_2O_3.	CO_2.	Insol.	Total.
(1) Normal dolomites without FeO; $CaMg(CO_3)_2$.								
Selmeczbánya ...	31·22	21·36	—		0·14	47·22	0·37	100·31
,, ...	32·76	19·97	—		0·31	47·31	0·22	100·57
Kapnikbánya ...	31·04	21·02	—	0·68	0·58	46·90	0·14	100·36
Nagybánya ...	29·60	21·60	—	0·35	0·23	46·50	1·49	99·77
(2) Dolomite without FeO; $Ca_3Mg(CO_3)_4$.								
Selmeczbánya ...	43·71	9·81	—	0·22	0·14	44·23	1·83	99·94
(3) Dolomites with small quantities of FeO; $Ca(Mg,Fe)(CO_3)_2$.								
Úrvölgy ...	30·84	19·63	1·67	—	0·51	46·67	0·07	99·39
Óradna	31·15	19·61	1·33	—	1·89	46·94	—	100·92
(4) Dolomites with more than 5 % FeO (Ankerite); $Ca(Mg,Fe)(CO_3)_2$.								
Boicza	33·23	7·78	12·81		2·57	42·31	—	98·70
Vaskő	30·69	15·16	6·74	1·27	2·18	44·65	0·22	100·91
,, ...	28·93	17·23	5·66	—	2·26	44·87	1·58	100·53
Magurka ...	28·62	13·70	11·86	—	1·16	44·64	0·23	100·21
Ötösbánya ...	27·55	11·22	17·10	—	1·58	42·74	0·74	100·93
(5) Ankerite in which FeO replaces CaO; $(Ca,Fe)(Mg,Fe)(CO_3)_2$.								
Felsőbánya ...	13·68	14·47	26·00	—	0·31	42·32	3·53	100·31
(6) Dolomites with MnO; $Ca(Mg,Mn,Fe)(CO_3)_2$.								
Hodrusbánya ...	33·84	14·27	1·68	3·97	—	44·21	—	99·84*
Vaskő	27·13	14·31	1·28	—	2·32	47·26	0·39	99·08†

* Also MnO 1·87. † Also MnO 6·39.

The ankerite from Felsőbánya occurs as lenticular rhombohedra on quartz with wolframite [Abstr., vol. 3, p. 101]. The specific gravities of the materials analysed were not determined. K. Z.

Tokody (László). *A magyarországi cerusszitek kristálytani monográfiája.* Math. Természettud. Közlemények, Budapest, 1926, vol. 35, pp. 165–256, 55 figs. [Summary:] Math. Természettud. Értesítő, Budapest, 1926, vol. 43, pp. 382–394 (Hung.), pp. 395–396 (Germ.), 1 fig.

Tokody (L.). *Kristallographische Monographie der ungarischen Cerussite.* Zeits. Krist., 1926, vol. 63, pp. 385–456, 55 figs.

Detailed crystallographic descriptions with references to the literature are given of cerussite from thirty Hungarian localities [now mostly in Slovakia and Rumania]. 49 forms are noted of which $\mathfrak{N}$ (0.14.3), $\mathfrak{M}$ (094), and Ω (230) are new [Dana's axes]. Combinations of forms and the relative frequency of forms and zones are noted. L. J. S.

Liffa (A.) & Tokody (L.). *Beiträge zur kristallographischen Kenntnis des Atakamits aus Südaustralien.* Centralblatt Min., Abt. A, 1926, pp. 183–191, 1 fig.

Detailed measurements made on four crystals of atacamite from Old Cornwall mine, near Kadina, South Australia, gave the forms *a c m t s e r* [Dana's letters], κ (790), and new λ (7.13.0), α (552), π (441), and the axial ratios $a:b:c = 0{\cdot}6598:1:0{\cdot}7549$. L. J. S.

Walker (T. L.) & Parsons (A. L.). *Minerals from the new nepheline syenite area, French river, Ontario.* Univ. Toronto Studies, Geol. Ser., 1926, no. 22, pp. 5–14, 1 pl., 3 text-figs.

A belt ($5 \times \frac{1}{4}$ miles) of grey gneissoid miaskite occurs in gneisses in Bigwood township (80° 45′ W., 46° N.), Sudbury district, and contains pegmatitic knobs and veins with the following minerals. Analysis of the typical nepheline-syenite gave I. Salmon-coloured nepheline gave analysis II, agreeing fairly well with the formula $(Na,K,H)_2O.Al_2O_3.2SiO_2$. Blue sodalite is scarce. Deep-black lepidomelane, anal. III. Honey-yellow cancrinite as large (3–4 inches) cleavage masses, anal. IV of material containing a small amount of alteration products; also as rough prismatic crystals (3×1 inches) with a pyramid of angle $cp = 24°$ (measured with the contact goniometer), corresponding with the axis $c = 0{\cdot}6678$ [or 0·39]. Surrounding the cancrinite is a zone ($\frac{1}{2}$–1 inch) of a white to pink porcellanous alteration product with low birefringence and sp. gr. 2·40–2·46; anal. V suggests, after deducting 11·19 % calcite, hydronephelite or ranite. Aegirine as radiating yellow-green tufts, α 1·752, β 1·788, γ 1·801; anal. VI is considered to indicate that the mineral is acmite rather than aegirine. Zircon as

brownish-red crystals of prismatic or bipyramidal habit. Analyses by H. C. Rickaby:

	I.*	II.	III.†	IV. §	V. §	VI. ‡
SiO_2 ...	55·90	42·56	31·64	36·24	36·33	52·63
Al_2O_3 ...	22·12	35·80	15·34	28·78	28·88	3·30
Fe_2O_3 ...	0·96	—	8·38	0·36	0·36	29·72
FeO ...	4·33	—	31·78	—	—	0·64
MnO ...	0·14	—	0·28	0·04	0·09	trace
MgO ...	0·37	0·20	0·90	0·26	0·48	0·69
CaO ...	0·44	0·05	—	4·83	10·62	0·18
Na_2O ...	8·35	14·86	0·67	18·63	7·83	11·66
K_2O ...	6·42	5·75	8·70	0·73	2·35	0·54
H_2O ...	0·57	0·67	1·93	4·64	8·47	0·26
CO_2 ...	0·67	0·35	—	5·61	5·15	—
Total ...	100·32	100·24	100·08	100·12	100·56	99·97
Sp. gr. ...	2·664	2·610	3·294	2·425	2·425	3·487

* Also TiO_2 0·05.
† Also Ti_2O_3 0·33, F 0·13.
§ Also Cl trace.
‡ Also Ti_2O_3 0·35.

A. L. P.

Walker (T. L.) & Parsons (A. L.). *Apatite, lepidomelane, and associated minerals from Faraday township, Hastings County, Ontario.* Univ. Toronto Studies, Geol. Ser., 1926, no. 22, pp. 20–25, 1 pl., 4 text-figs.

Pits worked for black mica in nepheline-syenite at times open out large cavities or caves that have been formed by the solution of calcite masses. These are filled with black earth in which are the residual minerals described. Lepidomelane as corroded crystals up to 3 feet across with the forms c(001), b(010), o(112), m(110), $\mu(\bar{1}11)$. The material is opaque, only occasionally showing a faint green on the frayed edges. Analysis by H. C. Rickaby gave: SiO_2 34·04, TiO_2 1·48, Al_2O_3 15·60, Fe_2O_3 4·22, FeO 23·60, MnO 0·99, MgO 7·46, Na_2O 0·88, K_2O 8·89, H_2O 1·26, F 2·02 = 100·44, sp. gr. 3·16. Apatite as asparagus-green prisms (18 × 5 cm.) with the forms $c\,m\,x$, gave P_2O_5 41·24, F 3·65, CaO 55·10, FeO 0·36, MnO 0·12, MgO 0·23, Al_2O_3 0·12, CO_2 0·73 (as calcite), insol. 0·22 = 101·77; sp. gr. 3·184. Albite as corroded pinkish crystals. Purplish fluorite as granular masses. Magnetite showing perfect octahedral parting to 3 inches across. Pyrite as small irregular masses. Sphene, zircon, diopside, and scapolite, common in the apatite-mica (phlogopite) deposits elsewhere in Ontario and Quebec in acid plutonics and pyroxenites, are absent. A. L. P.

Walker (T. L.) & Parsons (A. L.). *The rate of oxidation of arsenides of iron, cobalt, and nickel.* Univ. Toronto Studies, Geol. Ser., 1925, no. 20, pp. 41–48.

The crushed materials, shown by analyses and microscopical examination to consist of a mixture of several minerals (rammelsbergite, safflorite, cobaltite, skutterudite, löllingite, &c.) were shaken in closed flasks containing water and air (or oxygen, or oxygen and carbon dioxide) for ten days. The pressure gradually diminished, until, in some cases, the oxygen was completely absorbed. The unaltered mineral varied from 64 to 99½ %, and analyses were made of the filtrate and of the arsenate taken up by dilute hydrochloric acid. The clear filtrate contained arsenious acid As_2O_3 (representing about half of the oxidized arsenic), acid arsenates ($H_2Ni_2As_2O_8$ and $H_4NiAs_2O_8$), and small amounts of sulphates; while the precipitated arsenate is a normal arsenate of nickel and cobalt. Cobaltite and löllingite are only slightly altered, but rammelsbergite and safflorite (and to a rather less degree niccolite) are rapidly attacked by this method. These results are discussed in connexion with the weathering and alteration of the ores of the Keeley mine. L. J. S.

Carmichael (Ferga). *Oxidation of sulphides.* Univ. Toronto Studies, Geol. Ser., 1926, no. 22, pp. 29–36.

The crushed and sieved minerals were agitated for 13 days in water and oxygen in stoppered bottles at the ordinary temperature, and the soluble and insoluble oxidation products were analysed. Only with polydymite and pyrrhotine was an insoluble slimy precipitate formed in small amount. The percentages of material oxidized were for polydymite 18·50, chalcosine 0·65, pyrrhotine (from Sudbury, Ontario) 0·38, troilite 0·37, marcasite 0·29, pentlandite 0·26, pyrrhotine (from Hybla, Ontario) 0·18, pyrite 0·13, stibnite 0·07, blende 0·06, chalcopyrite 0·02, bornite 0·01, galena 0·01. Analyses are given of each of these minerals. The polydymite (from Vermilion mine, Sudbury) gave Fe 11·88, Ni + Co 47·42, Cu 0·88, S 39·94, insol. 0·44 = 100·56. This was further treated for 50 days and the residue on analysis still showed the R″ : S ratio of 4 : 5. The view that the mineral is a mixture of pentlandite and violarite [Abstr., vol. 2, p. 338] is thus not supported. A. L. P.

Walker (T. L.). *Arsenides from the silver veins of South Lorrain, Ontario.* Univ. Toronto Studies, Geol. Ser., 1925, no. 20, pp. 49–53, pl. 3 (fig. 1), pl. 4.

Skutterudite as brilliant cubic crystals 1–5 mm. across from the Keeley mine and the Frontier mine contains a core consisting of alter-

nating zones of smaltite and chloanthite. Two analyses correspond with 80·57 and 88·32 % $CoAs_3$; sp. gr. of the latter 6·519. Löllingite forms large nodular radiating masses or concentric growths; analysis shows 53·77 % $FeAs_2$, with admixed safflorite, cobaltite, and skutterudite. Masses nearly a foot across of fairly pure rammelsbergite have been found in the Keeley mine; sp. gr. 6·734; analysis shows 61·33 % $NiAs_2$, with safflorite, cobaltite, and löllingite. Rammelsbergite (and also niccolite) is readily altered in a moist atmosphere, becoming coated with annabergite in one week. Cobaltite, skutterudite, and löllingite are more resistant to weathering. L. J. S.

Walker (T. L.) & Parsons (A. L.). *Petzite from the Hollinger mine, Timmins, Ontario.* Univ. Toronto Studies, Geol. Ser., 1925, no. 20 pp. 39–40.

Petzite was found in 1924 in considerable quantity in the 800 foot level of the Hollinger mine associated with quartz, ankerite, and native gold. It forms small masses and penetrates along the cleavages of the ankerite. Sp. gr. 7·53. Analysis by H. C. Rickaby gave: Ag 49·57, Au 11·10, Fe 0·76, Co 0·76, Te 33·62, As 1·20, S, Sb, Ni traces, insol. 2·38, total 99·39, agreeing with $(Ag_2,Au_2,Fe,Co)(Te,As)$. The mineral is dissolved by nitric acid leaving a residue of all the gold. This suggests that the gold may be present in a finely divided form in the silver telluride, but microscopical examination showed the mineral to be homogeneous. A. L. P.

Swanson (W. L.). *The mineral association of the wolframite deposits at Burnt Hill brook, York County, New Brunswick.* Univ. Toronto Studies, Geol. Ser., 1925, no. 20, pp. 28–32.

Veins containing topaz [Min. Mag., vol. 17, p. 39], quartz, muscovite, magnetite, limonite, molybdenite, and wolframite, occur in altered slate in contact with granite. One vein specimen consisted of 97·5 % topaz, and another of quartz with 1 % topaz. Microscopic examination of polished surfaces of the wolframite showed only minute inclusions of quartz; analysis gave WO_3 75·45, SiO_2 0·23, FeO 15·75, MnO 8·31, $(Nb,Ta)_2O_5$? trace, Sn nil, total 99·74; sp. gr. 7·10. The unaltered slate consists of dirty brown kaolin, and the altered slate near the granite contact consists of quartz, biotite, muscovite, magnetite, and groundmass. An analysis is given of the granite. A. L. P.

Walker (T. L.) & Parsons (A. L.). *Axinite from the Moneta mine, Timmins, Ontario.* Univ. Toronto Studies, Geol. Ser., 1925, no. 20, pp. 20–21.

Light-drab coloured axinite occurs in vein-quartz or sometimes in calcite in the Moneta gold mine, where it is associated with an epidote poor in iron [Abstr., vol. 2, p. 410]. Analysis by E. W. Todd gave: SiO_2 42·34, Al_2O_3 19·68, Fe_2O_3 1·90, FeO 5·28, MnO 3·38, CaO 20·27, MgO 1·24, H_2O 1·23, B_2O_3 5·16, total 100·48; sp. gr. 3·274. This gives an orthosilicate ratio (the formula given in a previous paper [Abstr., vol. 2, p. 237] is incorrect). A. L. P.

Sine (F. L.). *Antozonite from Monteagle township, Hastings County, Ontario.* Univ. Toronto Studies, Geol. Ser., 1925, no. 20, pp. 22–24, pl. 1 (fig. 5).

A dark-blue fluorite, occurring with zircon, ellsworthite, quartz, and calcite as patches in a pegmatite dike in the McDonald felspar quarry [at Hybla; Abstr., vol. 3, p. 248], emits when crushed a strong odour suggestive of ozone. The oxidizing gas given off is assumed to be free fluorine, and its amount estimated at 0·045 %, or about 80 % by volume. The mineral decrepitates and loses colour when heated. A. L. P.

Sine (F. L.). *Fetid feldspar from Loughboro township, Frontenac County, Ontario.* Univ. Toronto Studies, Geol. Ser., 1925, no. 20, pp. 25–27, pl. 3 (fig. 3).

A white or sometimes bluish felspar emits when broken a smell suggestive of selenium, which may be due to H_2S or H_2Se. Gas is given off when the mineral is powdered under water. It is a microcline with microperthitic intergrowth of albite, and gave on analysis by W. K. McNeill: SiO_2 65·72, Al_2O_3 18·89, Fe_2O_3 0·63, CaO 0·62, Na_2O 3·68, K_2O 9·61, H_2O 0·14, CO_2 0·53, total 99·91. The associated crystals of diopside and sphene are briefly described. A quartzite from the same neighbourhood gives when broken a similar but fainter odour.

A. L. P.

Walker (T. L.) & Parsons (A. L.). *Zonal pleochroic twinned phlogopite.* Univ. Toronto Studies, Geol. Ser., 1925, no. 20, pp. 18–19, pl. 2.

Cleavage-plates of phlogopite (2E 18°–20°) from Bedford and Loughboro, Ontario, show well-marked zonal structure, and when viewed obliquely they show two pleochroism colours side by side in the twinned portions. L. J. S.

Parsons (A. L.). *Albertite in gypsum from Hillsboro, New Brunswick.* Univ. Toronto Studies, Geol. Ser., 1925, no. 20, pp. 33–34.

A block of gypsum is penetrated by a cylindrical (1 inch diameter) mass of albertite, analysis of which by L. J. Rogers gave: C 78·80, H 6·16, N 1·50, S 2·03, ash 1·40, O (diff.) 10·11. L. J. S.

Kelly (Sherwin F.). *The microstructure of anthracite and anthraxolite.* Univ. Toronto Studies, Geol. Ser., 1926, no. 22, pp. 44–47, 1 pl.

Polished surfaces of anthraxolite from near Sudbury [Ontario] and of anthracite were etched by exposure to the blowpipe flame and were examined microscopically in reflected light. The woody tissue shown by anthracite is not seen in anthraxolite. L. J. S.

[Kuznetzov (I. G.)] Кузнецов (И. Г.). О лиеврите (ильваите) из Джимаринского мышьякового месторождения на Северном Кавказе.—Kouznetzow (J.). *Sur la liévrite (ilvaïte) du gisement arsénifère de Djimara, Caucase du Nord.* Изв. Геол. Ком. (Bull. Com. Géol.), 1925, vol. 44, pp. 721–723 (Russ. with French résumé, pp. 730–731), 4 figs.

Ilvaite is found in contact-deposits of mispickel at Dzhimara in the Dargan gorge, Caucasus. On crystals of type I the prisms m (110) and s (120) predominate with o (111) and r (101) as terminal faces. A new prism (350) is noted. One crystal gave the axial ratios $a:b:c = 0{\cdot}6711:1:0{\cdot}4467$, and another $0{\cdot}6586:1:0{\cdot}4414$. Optic axial plane (010). Sp. gr. 4·000, H. 5–5½, analysis I. On crystals of type II the main forms are b (010), s (120), m (110), h (210), together with η (730) and new (5.13.0), (11.23.0), (450), (950), (490), (7.17.0); $a:b:c = 0{\cdot}6843:1:0{\cdot}4538$; analysis II.

	SiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MnO.	CaO.	MgO.	H_2O(500–600°).	Total.
I.	29·18	0·46	18·67	33·32	2·26	14·11	0·26	1·53	99·79
II.	29·09		54·12*		3·75	13·87	0·53	n.d.	—

* Including FeO as Fe_2O_3.

P. N. C.

[Labuntzov (A. N.)] Лабунцов (А. Н.). Натролит из Хибинских и Ловозерских Тундр.—Labuncov (A.). *La natrolithe des Monts Chibines et Lujawrurt en Laponie russe.* Труды Геол. Мин. Музея Петра Великого, Росс. Акад. Наук (Trav. Musée Géol. Min. Pierre le Grand, Acad. Sci. Russ.), 1925, vol. 5, no. 2, pp. 17–32, 4 figs.

In addition to analyses already published [Abstr., vol. 2, p. 264], the following by N. I. Vlodavetz is given of pink natrolite from Yukspor: SiO_2 47·29, Al_2O_3 28·40, Fe_2O_3 trace, CaO 0·87, Na_2O 13·76, H_2O 9·57

= 99·89. Crystals show the forms *m a b n* (210) *o t z* [Dana's letters]. 'Spreustein' occurs as grey-white or reddish-grey pseudomorphs after nepheline and consists of a mixture of natrolite, hydronephelite, and aluminium hydroxide. It owes its origin to hydrothermal action and partly to weathering. 'Bergmannite' is a similar material but derived from sodalite. The localities and paragenesis of these minerals are noted.

P. N. C.

[Labuntzov (A. N.)] Лабунцов (А. Н.). Ильменит из Хибинских Тундр.—Labunzov (A.). *L'ilménite des Monts Chibines.* Труды Мин. Музея Акад. Наук СССР (Trav. Musée Min. Acad. Sci. URSS), 1926, vol. 1, pp. 35–42, 1 pl.

The modes of occurrence of ilmenite and the associated minerals are tabulated for sixteen localities in the Khibinsky tundra, Kola peninsula. The tabular crystals show the forms *c a n*, *X e r s l* [Dana's letters].[1] Analyses I and II are of material formed during the pegmatitic phase; III and IV from the later hydrothermal phase.

	TiO_2.	Fe_2O_3.	FeO.	MgO.	Total.
I.	54·01	9·27	37·52	—	100·80
II.	54·20	2·58	42·85	—	99·63
III.	56·43	7·16	33·91	2·10	99·60
IV.	60·00	2·85	37·83	—	100·68

P. N. C.

Fermor (L. Leigh). *On the composition of some Indian garnets.* Rec. Geol. Survey India, 1926, vol. 59, pp. 191–207, 1 pl.

Analyses by S. N. Godbole are given of nine garnets selected from various rocks. These, together with eight previously published analyses of Indian garnets, are re-calculated as percentages of the usual garnet molecules $3R''O.R'''_2O_3.3SiO_2$, and the following additional members are assumed: $3FeO.Fe_2O_3.3SiO_2$ ('skiagite'), $3MnO.Fe_2O_3.3SiO_2$ ('calderite'), and $3MnO.Mn_2O_3.3SiO_2$ ('blythite'). [The analyses are, however, faulty, and do not warrant the distinction between FeO, Fe_2O_3, MnO, and Mn_2O_3.] Some special names are devised for garnets of intermediate composition.

L. J. S.

Christie (W. A. K.). *An occurrence of cryptohalite (ammonium fluosilicate).* Rec. Geol. Survey India, 1926, vol. 59, pp. 233–236.

This was found as an encrustation together with sulphur on the surface of the ground above a burning coal seam in the Bararee colliery, Barari,

[1] The forms *n*, and *X* (given in the original as $\bar{\lambda}$ and *m* with Goldschmidt's 'G_2' indices) are stated to be new for ilmenite; but *n*, was recorded by N. I. Koksharov in 1853, and *X* by R. H. Solly, Min. Mag., 1906, vol. 14, p. 185.

Jharia coal-field. It forms small bladed crystals (optically uniaxial, ω_{Na} 1·406, ϵ_{Na} 1·391) or opaque white mamillary masses (isotropic n_{Na} 1·369, D 2·004). Analyses of the latter gave NH_4 20·43, SiF_6 78·87, F 0·07, SO_4 0·06, Cl trace, H_2O 0·30, insol. 0·15 = 99·88. The fluorine was probably derived by the action of sulphur dioxide from the burning coal on the apatite of an adjoining mica-peridotite dike. L. J. S.

Artini (Ettore). *Vesuvianite di Antronapiana.* Rend. R. Ist. Lombardo Sci. Lett., 1925, ser. 2, vol. 58, pp. 569–579, 5 figs.

Small pea-green crystals of idocrase have been found with the minerals described from this locality in Piedmont [Abstr., vol. 2, p. 268]. They show the forms *camfeutbpιzsix* [Dana] and new (10.10.9)?, (5.5.12)?, (521), (321)?, and (30.3.10)? Measurements gave (001): (101) = 28° 14′ 41″; $a:c = 1:0{\cdot}53720$. A table of interfacial angles is given. In addition to crystals of the ordinary prismatic habit, there are some of distorted habit with a monoclinic aspect, owing to elongation in the direction of the edge [111, 010] or [111, $\bar{1}$10]. L. J. S.

Hegemann (F.) & Steinmetz (H.). *Die Mineralgänge von Werfen im Salzkammergut.* Centralblatt Min., Abt. A., 1927, pp. 45–56, 4 figs.

Slates of Triassic age are penetrated by irregular veins containing quartz, breunnerite, haematite, lazulite, wagnerite, chlorite, &c. Three types of veins are distinguished: quartz veins, quartz-carbonate veins showing rod-like intergrowths of quartz and breunnerite, and carbonate veins. It is believed that they are of hydrothermal origin. Analysis I is of quite fresh crystals of wagnerite; II and III of cloudy crystals containing rosettes of an alteration product, perhaps a 'Ca-wagnerite'. Measurement of wagnerite crystals gave the axial ratios $a:b:c = 1{\cdot}8682:1:1{\cdot}5191$, $\beta = 71° 43′$; forms *acmMhwertvisnx* [Dana's letters] and $Y(201)$; and the optical constants α 1·5678, β 1·5719, γ 1·5824 (Na), 2E 45° 22½′, $Bx_a:c = -21\frac{1}{2}°$. Unaltered breunnerite crystals are colourless rhombohedra ($rr = 72° 30′$) with narrow prism faces at the edges; analysis gave FeO 21·1, MgO 31·5, CO_2 47·4, corresponding with $3FeCO_3.8MgCO_3$.

	PO_4.	F.	Mg.	Ca.	Fe.	Mn.	SiO_2.	CO_3.	Total.
I.	58·18	11·49	29·16	—	0·74	0·54	—	—	100·01
II.	56·23	10·34	24·81	6·18	0·62	0·49	0·67	0·36	99·70
III.	55·43	10·02	22·65	9·62	0·45	0·42	0·62	0·39	99·64

L. J. S.

Linck (G.) & Becker (W.). *Über einen Eisenoolith (Minette) von Uadi Halfa.* Chemie der Erde, 1926, vol. 2, pp. 134–136.

An oolitic ironstone forms several beds up to 50 cm. thick in Nubian sandstone east of Wadi Halfa, Sudan. Micro-sections show limonite grains ($\frac{1}{2}$–$\frac{3}{4}$ mm. diam.) with concentric shelly structure, in a small amount of black groundmass. Spaces are filled with calcite and colourless mineral identified as mesolite. Analysis shows limonite 83·10, mesolite 9·02, MnO_2 2·99, calcite 2·69 %. It is suggested that the iron-oolite is a metasomatic replacement of calcareous oolite, and that the silica of the zeolite was derived from radiolaria (indications of which are seen in the sections). L. J. S.

Drescher (F. K.). *Über zonaren Pyromorphit und Mimetesit von Tsumeb.* Centralblatt Min., Abt. A, 1926, pp. 257–270, 2 figs.

A specimen from Tsumeb, South-West Africa, shows honey-yellow to brown crystals consisting of an intergrowth of pyromorphite and mimetite. Prismatic crystals with the basal plane largely developed consist of arsenical pyromorphite (D 7·124; $a:c = 1:0{\cdot}7304$), the shell being richer in arsenic than the nucleus. On these are later growths of mimetite (D 7·186; $a:c = 1:0{\cdot}7284$) with pyramidal terminations. Basal sections show a more or less irregular zonal and lamellar structure, with 2V 1–6° in the central portion and 8–20° in the outer portions. The optical anomalies appear to be largely due to the want of strict parallelism of the sub-individuals that build up the crystal. L. J. S.

Machatschki (Felix). *Mineralogische Notizen.* Zeits. Krist., 1926, vol. 63, pp. 457–465.

(1) Beryl and its alteration products from Písek.—Analysis I is of cloudy beryl (D 2·661), and II (also K, Na as chlorides 0·37 %) of clear yellowish-green beryl (D 2·701). III (also Na_2O 2·80, K_2O 4·90) is of the greenish-yellow earthy decomposition product; this is calculated as a mixture of muscovite, beryl, bertrandite, quartz, and felspar. Six-sided cavities after beryl are lined with scaly muscovite, secondary quartz, and bertrandite crystals.

	SiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	BeO.	MgO.	CaO.	H_2O (110°).	H_2O (>100°).	Total.
I.	65·72	18·48	0·20	0·40	12·90	0·21	1·02	0·11	0·89	99·93
II.	66·35	18·30	0·09	0·47	12·74	0·16	0·82	0·13	0·51	99·57
III.	52·96	17·13	1·23	0·24	16·06	0·09	0·63	0·39	3·76	100·19

(2) Felspars of the beryl-pegmatite of Písek.—These are determined to be microcline-microperthite and albite. (3) Primary muscovite of

second generation in the tourmaline-pegmatite of Horaštovic, near Písek. —Analysis is given of a fine scaly muscovite occurring as a border round black tourmaline. (4) Andalusite from Rosenberg, Bohemia.—Large (10 × 3 cm.), opaque, dark-grey prisms of andalusite, coated with silver-white scaly muscovite, occur in quartz-patches in biotite-schist.

L. J. S.

Winchell (A. N.). *The chemical constitution of the tetrahedrite-tennantite system.* Amer. Min., 1926, vol. 11, pp. 181–185.

The atomic percentages are tabulated for thirty-three analyses selected from the literature, and they show that the text-book formula $4Cu_2S.Sb_2S_3$ is not valid. An alternative formula is not proposed. The formula of Prior and Spencer (1899), $Cu_6Sb_2S_6 + n\ R''_6Sb_2S_6$, suggests that R'' atoms may 'proxy' for monovalent copper, and that the extra three atoms of sulphur fall into the interspaces of the lattice. This formula agrees better with the plotted analyses than does the formula of Wherry and Foshag (1921), $Cu_{10}(Zn,Fe,Cu)_2Sb_4S_{13}$, in which part of the copper is divalent.

L. J. S.

Ross (Clarence S.). *The optical properties and chemical composition of glauconite.* Proc. U.S. National Museum, 1926, vol. 69, art. 2, 15 pp., 2 figs.

The glauconite grains from a Cambrian dolomite carrying lead-ores near Bonneterre, St. Francis Co., Missouri, are often single crystals with a micaceous cleavage. The acute negative bisectrix is not quite normal to the cleavage ($a:c$ about 3°); α 1·597, β 1·618, γ 1·619, 2V 20°; pleochroism, γ and β lemon-yellow, α dark bluish-green. Analysis by G. V. Brown gave I (also MnO 0·01, P_2O_5 0·12, H_2O at 110° 1·94, H_2O (incl. CO_2) over 110° 4·62). The dehydration curve shows a sharp break at 280° C., above which 3·26 % H_2O is lost, corresponding with $2H_2O$ in the formula. Optical data are also given for several other American glauconites; including a specimen of unknown origin from Huntington, Oregon, which resembles a compact serpentine in appearance, but agrees with glauconite in composition (anal. II by E. P. Henderson [the figures for Na_2O and K_2O are evidently transposed in error]) and optical data (α 1·59, γ 1·62, 2V 20°–40°). The more reliable published analyses (17) of glauconite are tabulated and plotted, and the composition is expressed as isomorphous mixtures of the end-members $2H_2O.K_2O.2(Mg,Fe)O.2(Fe,Al)_2O_3.10SiO_2 + 3H_2O$ and $2H_2O.K_2O.(Mg,Fe)O.3(Fe,Al)_2O_3.10SiO_2 + 3H_2O$, suggesting a replacement of RO by R_2O_3 [cf. Min. Mag., vol. 19, p. 333].

	SiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MgO.	CaO.	Na_2O.	K_2O.	H_2O.	Total.
I.	48·66	8·46	18·80	3·98	3·56	0·62	nil	8·31	6·56	99·08
II.	49·05	19·66	7·96	0·75	1·17	2·34	6·18	0·78	11·79	99·68

L. J. S.

Shannon (E. V.) & Berman (H.). *Barysilite from Franklin Furnace, New Jersey.* Amer. Min., 1926, vol. 11, pp. 130–132.

Barysilite, previously known only from Sweden, has been found at Franklin Furnace as pink to colourless masses associated with willemite and yellow garnet. It has a basal cleavage, and is optically uniaxial and negative, ω 2·05. Deducting 10 % impurities, analysis, SiO_2 16·96, PbO 80·24, MnO 2·80, agrees nearly with the usual formula $3(Pb,Mn)O.2SiO_2$.

L. J. S.

Shannon (Earl V.) & Larsen (Esper S.). *A peculiar manganiferous serpentine from Franklin Furnace.* Amer. Min., 1926, vol. 11, pp. 28–30.

A red-brown mineral with feeble resinous lustre and resembling massive garnet in appearance was found on a granular mixture of franklinite, willemite, calcite, and biotite from Franklin Furnace, New Jersey. It is optically negative with α 1·561, β 1·567, γ 1·568. Analysis, SiO_2 41·32, Al_2O_3 0·65, FeO 1·57, MnO 7·57, ZnO 0·14, MgO 32·58, CaO 0·96, H_2O+ 12·44, H_2O- 0·94 = 98·17, shows it to be a manganiferous serpentine. L. J. S.

Foshag (William F.). *Radiated chrysotile from Franklin Furnace, New Jersey.* Amer. Min., 1926, vol. 11, pp. 38–39.

Radiating groups of hair-brown silky fibres are embedded in calcite. The optical data (α 1·546, β 1·550, γ 1·557) are those of chrysotile. Analysis gave SiO_2 41·47, Al_2O_3 0·10, FeO 0·90, MnO 0·71, MgO 38·40, CaO 0·83, H_2O+ 14·51, H_2O- 2·31 = 99·65. L. J. S.

Bauer (L. H.) & Palache (C.). *Hyalophane from Franklin Furnace, New Jersey.* Amer. Min., 1926, vol. 11, pp. 172–174.

A dark-red granular felspar found on the old dump of the Parker shaft gave, after deducting 25 % of intimately admixed impurities (bementite, hancockite, baryte), SiO_2 49·51, Al_2O_3 25·48, BaO 11·47, K_2O 9·98, Na_2O 3·56. Sp. gr. 2·90, n_β about 1·54. L. J. S.

Larsen (E. S.), Hess (F. L.), & Schaller (W. T.). *Uranium minerals from Lusk, Wyoming.* Amer. Min., 1926, vol. 11, pp. 155–164.

Uranophane occurring in quartzite as rosettes of yellow crystals has α 1·642, β 1·665, γ 1·672, 2V 37°–45°, negative. The optical characters

indicate orthorhombic symmetry, and this is in part confirmed by some goniometric measurements. An approximate analysis gave, after deducting large amounts of impurities, SiO_2 13·9, UO_3 67·2, CaO 6·5, H_2O 12·6%. This is the material to which the name 'lambertite' was given [Abstr., vol. 1, p. 22]. Analysis of a black uranium mineral suggests that this is pitchblende intermixed with copper minerals. The Pb : U ratio gives the age as 54 million years. L. J. S.

Larsen (Esper S.) & Shannon (Earl V.). *Boussingaultite from South Mountain, near Santa Paula, California.* Amer. Min., 1920, vol. 5, pp. 127–129.

The pure white boussingaultite forms stalactites and encrustations in large cavities in sandstone and chalky shale from which hot gas is emitted. The fibres give oblique extinction, α 1·470, β 1·472, γ 1·479 (optical data are also given for the artificial salt). Analysis gave: SO_3 43·49, $(NH_4)_2O$ 10·86, MgO 11·54, Al_2O_3 0·04, Fe_2O_3 0·08, K_2O 0·22, Na_2O 0·60, H_2O 31·48, CaO, Cl, CO_2 traces, total 98·31. Ammonium is low, and the formula is perhaps $(NH_4,H)_2SO_4.MgSO_4.6H_2O$. L. J. S.

Goldschmidt (V.) & Thomson (E.). *Tetragonal system. Phosgenite from Tsumeb, Ambo-land, Southwest Africa.* Amer. Min., 1920, vol. 5, pp. 131–132, 1 fig.

Two crystals of smoke-brown phosgenite showed the forms c (001), a (100), u (210), e (101), o (201), x (111), s (211), d (103), and new A (401), and gave the axial ratio $a : c = 1 : 1{\cdot}0883$. L. J. S.

Audrieth (Ludwig F.) & Martens (James H. C.). *Antlerite from Chuquicamata, Chile.* Amer. Min., 1925, vol. 10, pp. 161–163.

A dark-green mineral occurring, sometimes with gypsum, as veinlets in granite is proved by analysis, CuO 66·34, SO_3 22·32, H_2O 10·52, insol. 0·88 = 100·06, to be antlerite $3CuO.SO_3.2H_2O$ [Abstr., vol. 2, p. 412]. Some of the crystals are flattened parallel to the perfect cleavage (010), while others are about equally developed along the three axes. Optically positive, $a = b$, $\beta = c$, $\gamma = a$; α 1·730, γ 1·786. Pleochroism α yellowish-green, β and γ bluish-green. L. J. S.

Shannon (Earl V.). *The so-called halloysite of Jones Falls, Maryland.* Amer. Min., 1925, vol. 10, pp. 159–161.

A lead-grey to olive-green clayey mineral occurs as an alteration product of stilbite and chabazite ('haydenite') in crevices in gneiss at Jones Falls, Baltimore, and has hitherto been referred to chlorite or to halloysite. Analysis: SiO_2 48·92, Al_2O_3 18·96, Fe_2O_3 8·75, FeO 1·09,

CaO 1·68, MgO 2·24, H_2O 19·00 = 100·64, gives the formula $\frac{2}{5}R''O.R'''_2O_3.3SiO_2\,4H_2O$, or more simply $Al_2O_3.3SiO_2.4H_2O$. The material has a crystalline micaceous structure and is evidently identical with the gouge clays called 'leverrierite' [and later called beidellite, Abstr., vol. 3, p. 9]. L. J. S.

Wherry (Edgar T.). *Bentonite as a one-dimensional colloid.* Amer. Min., 1925, vol. 10, pp. 120–123.

According to their size, mineral grains may be classed as macroscopic, microscopic, colloidal, and molecular. In cases where the habit is pronouncedly tabular or fibrous they may belong to two (or three) of these classes. Bentonite [Abstr., vol. 3, p. 72] has the form of microscopic plates of extreme thinness, though these still show a distinct biaxial interference-figure. Its colloidal properties (adsorption, plasticity, and swelling up in water) are attributed to the large surface area presented by the material. L. J. S.

Ross (Clarence S.) & Shannon (Earl V.). *The so-called genthite from Webster, North Carolina.* Amer. Min., 1925, vol. 10, pp. 444–445.

The apple-green mineral with conchoidal fracture and faint waxy lustre occurs as films and veinlets in altered dunite. It has a minutely fibrous structure; mean n 1·510, birefringence about 0·01 positive, and appears to be optically uniaxial. Analysis, SiO_2 43·26, $Al_2O_3 + Fe_2O_3$ 1·20, MgO 30·00, NiO 4·20, CaO 0·24, H_2O+ 10·54, H_2O- 9·30 = 98·74, suggests that it is a nickeliferous deweylite. L. J. S.

Myers (W. M.) & Peck (Albert B.). *A fulgurite from South Amboy, New Jersey.* Amer. Min., 1925, vol. 10, pp. 152–155.

Tubular fragments varying from $\frac{3}{16}$ to 3 in. in diameter and totalling 9 ft. in length, were found in a sand pit. The glass shows a radiating structure, due to a radial arrangement of elongated gas bubbles. Owing to these bubbles the sp. gr. is low (1·05–1·25); refractive index 1·462. Analysis by E. E. Berger gave SiO_2 99·00, Al_2O_3 0·70, Fe_2O_3 0·30. A few included needles are, perhaps, mullite. Sand grains adhering to the exterior of the fulgurite have a centre of quartz bordered by cristobalite. L. J. S.

Geinitz (E.) [1854–1925]. *Vier Blitzröhren aus Mecklenburg.* Centralblatt Min., 1921, pp. 33–34, 1 fig.

Figures are given of four specimens of lightning-tubes (fulgurites) from sand at different places in Mecklenburg. L. J. S.

Ross (Clarence S.) & Henderson (E. P.). *Topaz and associated minerals from the Einstein silver mine, Madison County, Missouri.* Amer. Min., 1925, vol. 10, pp. 441–443.

Granular topaz occurs in altered granite forming the wall-rock of quartz veins carrying argentiferous galena, hübnerite, scheelite, fluorite, &c. A partial chemical analysis and approximate optical data prove the mineral to be topaz. L. J. S.

Peck (Albert B.). *Dumortierite as a commercial mineral.* Amer. Min., 1926, vol. 11, pp. 96–101.

The dumortierite worked for refractory material at Limerick Canyon, Nevada, has a schistose structure and occurs as veinlets in a dike-like mass of andalusite and quartz, and as a large 'vein'. The colour ranges from pale pink through lilac and lavender to blue. Sp. gr. 3·30±. Pale blue crystals gave α 1·675, β 1·685, γ 1·692 (Na). The minute needles are intimately intergrown with muscovite; quartz, andalusite, and rutile are also present. A partial analysis of the rock indicates 75·33 % dumortierite. It is suggested that the blue colour is due to Ti_2O_3 (replacing Al_2O_3) and the pink to TiO_2 (replacing SiO_2). Heated at about 1250° C. the mineral breaks down, with loss of colour and increase in volume, into mullite and glass; and this mixture shows no sign of fusion at 1800° C. L. J. S.

Fairbanks (Ernest E.). *Dumortierite from Nevada.* Amer. Min., 1926, vol. 11, pp. 93–96; correction, p. 135.

A dumortierite-sericite-schist, said to be a dumortierized trachyte, occurring in Limerick Canyon, Rochester mining district, Nevada, has recently been worked for a refractory material. The optical dispersion is stated to be very strong; α_{Li} 1·677. The lilac colour is probably due to the presence of titanium. Dielectric constants are given for dumortierite, andalusite, and kyanite. L. J. S.

Müller (John Hughes). *Germanium in smithsonite and mine waters from Hudson mine, Livingstone County, Kentucky.* Indust. Engin. Chem. Easton, Pa., 1924, vol. 16, pp. 604–605.

Compact yellowish-brown smithsonite contains 0·01 % GeO_2. The residue obtained by evaporating the mine water contains 0·29 % GeO_2. With the oxidation of blende the germanium is evidently carried in solution and deposited with carbonates. L. J. S.

Gillson (J. L.) & Shannon (Earl V.). *Szaibelyite from Lincoln County, Nevada.* Amer. Min., 1925, vol. 10, pp. 137–139.

Finely fibrous szajbelyite[1] has been found as grains and veinlets in a magnetite-serpentine-ludwigite-rock in metamorphic dolomitic limestone at Blind Mtn. in Lincoln Co. It is optically uniaxial (not biaxial) and negative with ω 1·561, ϵ 1·527, D 2·76, H. 3–4. The white mineral becomes brownish on exposure (then ω 1·650, ϵ 1·575). Analysis made on a small amount of material containing about 10 % of an undetermined fibrous mineral gave: SiO_2 4·83, B_2O_3 (31·22), Al_2O_3 0·63, Fe_2O_3 4·21, CaO 1·26, MgO 46·72, H_2O+ 9·87, H_2O- 1·26 = 100·00. The formula is perhaps $4MgO.3B_2O_3.MgOH.H_2O$. L. J. S.

Linck (G.). *Über das Achsenverhältnis des Sillimanit.* Centralblatt Min., Abt. A, 1926, pp. 385–387.

From a comparison of the crystal volumes and the molecular volumes of polymorphous minerals the axial ratio for fibrolite is deduced as $a : b : c = 0{\cdot}97 : 1 : 0{\cdot}70$ [cf. Min. Mag., vol. 19, p. 111]. Microscopic crystals of fibrolite in a tektite from Peru [Abstr., vol. 3, p. 97] gave angles corresponding with the forms (051) and (031). L. J. S.

Rogers (A. F.) & Reed (R. D.). *Sand-calcite crystals from Monterey County, California.* Amer. Min., 1926, vol. 11, pp. 23–28, 2 figs.

The rough crystals, groups of crystals, and irregular concretions occur in a poorly cemented sand of Miocene age in the Cholame hills. They contain 35–65 % of angular quartz grains. Some show a central crystal $f(02\bar{2}1)$ surrounded by three others in twinned position, the twin-planes being the three faces of the form $e(01\bar{1}2)$ and with composition-planes at right angles to these. The twin-law on $(20\bar{2}1)$ given by A. Lacroix (1909) for calcite is doubted. L. J. S.

Slavik (F.). *Note on zaratite from Bohemia, Pennsylvania and Tasmania.* Amer. Min., 1926, vol. 11, pp. 279–280. [See Abstr., vol. 3, p. 122.]

[1] Szajbélit of K. F. Peters, 1862 (Sitzungsber. Math.-naturw. Kl. Akad. Wien, 1862, Abt. I, vol. 44 (for 1861), p. 143). Dana (1868) and A. H. Chester (1896) adopted the spelling Szaibelyite. Named after István [= Stephan] Szaibely (1777–1855), mine surveyor of Rézbánya, Hungary. Later members of the family have, however, adopted the spelling Szájbely. [Information supplied by K. Zimányi, 1927.]